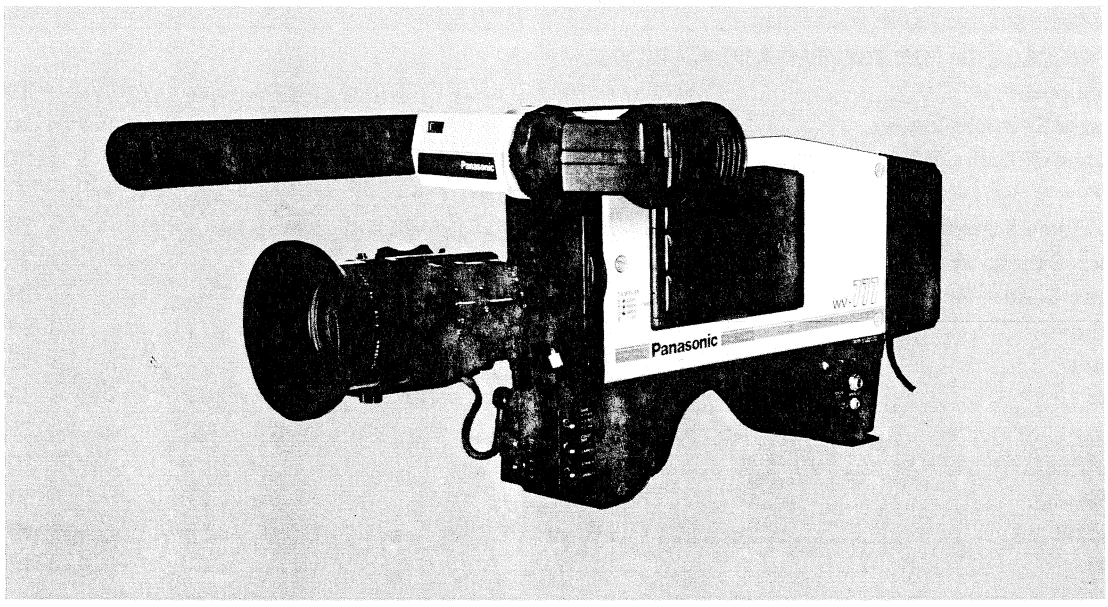
Operating Instructions

Colour Video Camera
WV-777 Series



Panasonic

Before attempting to connect or operate this product, please read these instructions completely.

ENGLISH VERSION ..... 1 ~ 42
DEUTSCHE AUSGABE (GERMAN VERSION) ..... 43 ~ 78

ENGLISH VERSION

CONTENTS

PREFACE 2
FEATURES 2
PRECAUTIONS 3
COMPOSITIONS FOR WV-777 SERIES 5
MAJOR OPERATING CONTROLS
ENG Colour Camera System WV-777 6
Auto Iris Power Servo Control Zoom Lens 13
Studio Camera System/Main Optional Accessories 16
CONTROLS AND THEIR FUNCTIONS
ENG Colour Camera WV-777 7
Auto Iris Power Servo Control Zoom Lens 14
Optional Remote Control Unit (RCU) WV-RC30 17
Optional 5" Viewfinder WV-VF35 20
Optional Lens Control Kit WV-LK30 20
INSTALLATION FOR ENG/EFP OPERATION 21
INSTALLATION FOR BATTERIES 22
INSTALLATION FOR AC ADAPTOR OR BATTERY PACK 23
INSTALLATION FOR STUDIO OPERATION 23
CONNECTION FOR ENG/EFP APPLICATIONS
1. ENG Application 26
2. Gen-Lock EFP Application 26
3. Gen-Lock EFP with RCU Application 27
CONNECTION FOR STUDIO APPLICATIONS 27
OPERATING PROCEDURE FOR ENG/EFP APPLICATIONS
1. ENG Application 28
2. Gen-Lock EFP Application 30
3. Gen-Lock EFP with RCU Application (Studio Application) 33
ADJUSTMENT
Auto Iris Power Servo Control Zoom Lens 35
Auto Black Balance Setting 36
Auto White Balance Setting 36
Registration 37
Filter Wheel 38
Gen-Lock 38
Viewfinder 39
EXTERNAL DC INFORMATION 39
BATTERY CHARGE 39
SPECIFICATIONS 40
COMPOSITION 42

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

PREFACE

Panasonic introduces the WV-777 ENG/EFP colour camera. Incorporating Panasonics most recent video technology, this camera offers you advanced performance at a modest price without any compromise in quality and features.

The WV-777 gives you the superb advantages of a three Saticon® tube image pick-up system, an efficient prism optics system, and a varied array of high performance operating features that were once only available in higher priced cameras. The WV-777 consistently offers you quiet, high resolution images along with excellent colorimetry.

This camera boasts a signal-to-noise ratio of 53dB and a horizontal resolution of 550 lines at the center. Automatic Beam Control (ABC) eliminates comet-tails and blooming and the built-in vertical and horizontal image enhancers produce sharp, clean images. The automatic circuits and easy access yet shielded controls incorporated into this camera make the WV-777 a pro performer.

The WV-777 also offers you operational convenience and system flexibility. Its low profile design permits unobscured vision for cameramen, and its compact size and lightweight construction provides for a minimum of operator discomfort.

The WV-777 is built to go just about anywhere. Its ENG tough metal casing and magnesium die-cast chassis give it a high degree of internal strength, long term alignment stability, and RFI protection.

FEATURES

WV-777

1. Self-contained, compact professional ENG/EFP portable camera.
2. High performance, high index prism optical system with three 2/3" Saticon® tubes.
3. PAL output for use with any VTR.
4. Horizontal resolution of 550 lines.
5. Signal-to-noise ratio of 53 dB.
6. 1.5" electronic viewfinder (1-3/8" actual visual size, measured diagonally) tilts and adjusts for convenient viewing.
7. Front mounted optional unidirectional electret condenser microphone.
8. Automatic beam control, digital automatic white set and automatic black set with memory.
9. +6 and +12 dB high gain switch.
10. Internal CCIR standard sync generator with Genlock.
11. Switchable audio output level (-20 dBm or -70 dBm).
12. Vertical aperture correction of 1H.
13. Built-in EBU colour bar generator.
14. Operates from five different power sources : body-integrated battery pack, body-integrated AC adaptor, optional RCU, optional portable VTR, or external DC.
15. Gamma correction adjustable from 0.45 to 1.0.
16. Die-cast chassis for rigid alignment of the optical system and metal camera exterior for durability and RF rejection.
17. 12:1 F1.6 servo control power zoom lens with automatic iris control.
18. Stand-by switch for reduced power consumption during idle modes.
19. Critical operating controls : R G B, horizontal and vertical R and B registration, auto/manual iris control, R and B gain pedestal controls, total pedestal control.
20. Removable side panels.
21. Full studio adaptability with optional 5" studio viewfinder (4.5" actual visual size, measured diagonally) and remote control unit (RCU).
22. Low power consumption of 22 watts.

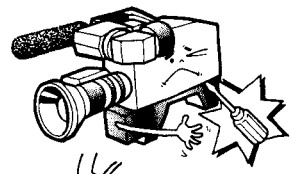
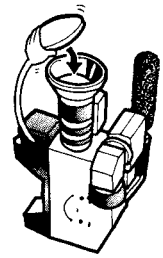
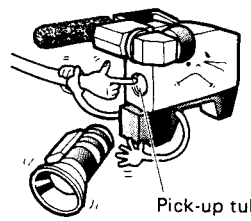
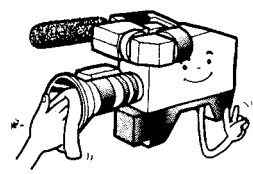
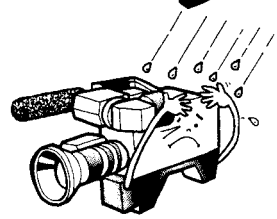
The serial number of this product may be found on the bottom cover of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

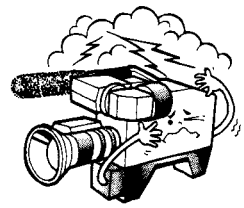
Serial No. _____

PRECAUTIONS

The WV-777 is a sensitive, high quality instrument and should be regarded as such. Because it is an electrical device, the danger of electric shock exists if it is used carelessly.

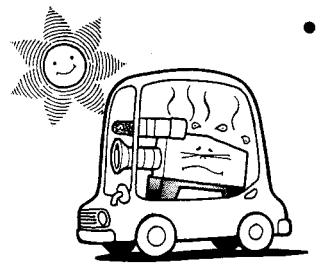
DON'TS		DO'S
x Do not attempt to disassemble the camera or RCU. In order to prevent electric shock, do not remove screws or cover. There are no user-serviceable parts inside.		• Do refer any servicing to qualified service personnel.
x Do not abuse the camera. Avoid striking, shaking etc. The camera contains a sensitive pick-up tube which could be damaged by improper handling or storage.		• Do handle the camera with care.
x Do not let the lens remain uncapped when the camera is not in use. If the lens is not installed, do not leave the lens mount hole uncovered. Do not leave the lens cap on when the power is turned on. This can reduce the life of the pick-up tube.		• Do protect the precision lens by placing the lens cap over the lens when the camera is not in use. If the lens is not installed, protect the surface of the Pick-up tube by placing the body cap into the lens mount hole. Always remove lens cap before turning the power on.
x Do not touch the surface of the lens or pick-up tube with your fingers.		• Do use a mild blower or lens cleaning tissue designed for coated lens, to clean the surface of the lens or pick-up tube in the event that they become dirty.
x Do not use strong or abrasive detergents when cleaning the camera body.		• Do use a dry cloth to clean the camera if it is dirty. In case the dirt is hard to remove, use mild detergent and wipe gently.
x Do not aim the camera toward the sun, whether it is turned on or not. This action could permanently damage the pick-up tube.		• Do use caution when operating the camera in the vicinity of spot lights or other bright lights, and light reflecting objects.
x Do not expose the camera or RCU to rain or moisiture, or try to operate it in wet areas. Do not operate the camera or RCU if it becomes wet.		• Do take immediate action if ever the camera or RCU do become wet. Turn power off and dry them thoroughly before using again. Moisture can damage the camera and RCU and also create the danger of electric shock.

x Do not operate the camera and RCU in the field during an electrical (lightning) storm.



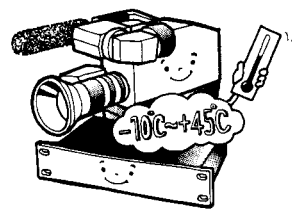
- Do follow the normal safety precautions to avoid personal injury.

x Do not leave the camera or RCU in a closed car or trunk during summer. Temperatures can reach or exceed the limits for devices within the camera.



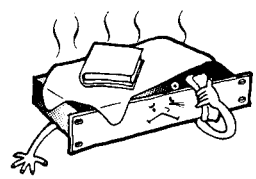
- Be aware of the temperature in the car or remove the equipment to a more moderate environment.

x Do not use the camera in an extreme environment where high temperature or high humidity exist.



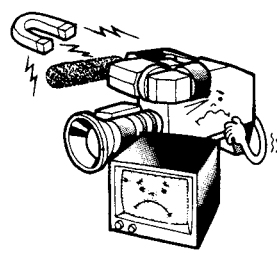
- Use the camera in environments where temperatures are within −10°C ~ +45°C, and humidity is below 90%.

x Do not leave the camera and RCU turned on when not in use.
Do not turn the power on and off repeatedly without use. Do not block the ventilation slots.



- Always turn the power off when the camera is not going to be used, this will extend the life of the pick-up tube. Operate the camera and RCU only where there is adequate ventilation.

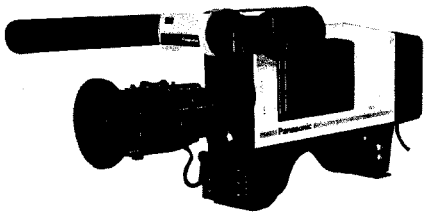
x Do not use near sources of strong magnetic fields.
Fluorescent lights, motors or other sources of magnetic fields may distort or otherwise adversely affect images.



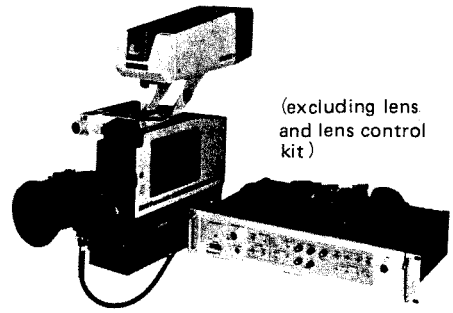
- Do use the camera far from the sources of strong magnetic fields.

COMPOSITIONS FOR WV-777 SERIES

■ ENG Colour Camera
(WV-777)



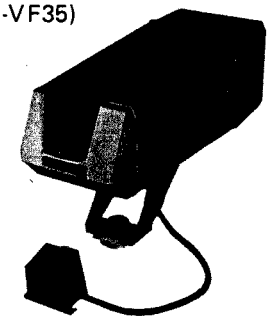
■ Studio Configuration
(WV-777ST)



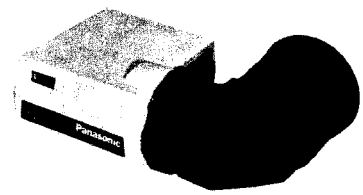
(excluding lens and lens control kit)

■ Remote Control Unit (RCU)
(WV-RC30)

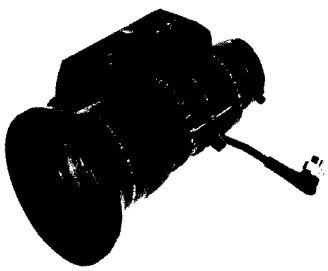
■ 5" Electronic Viewfinder
(WV-VF35)



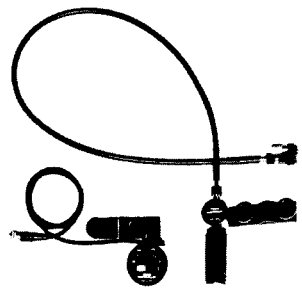
■ 1.5" Electronic Viewfinder
(WV-VF30)



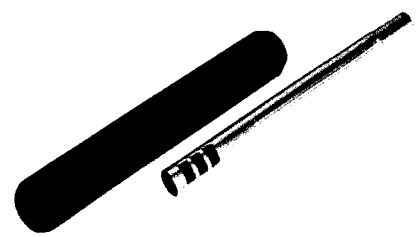
■ 12:1 Servo Control Zoom Lens
(WV-LZ30/12)



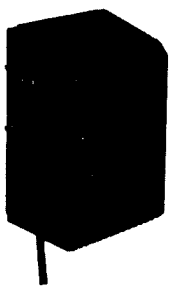
■ Studio Lens Conversion Kit
(WV-LK30)



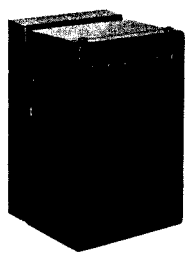
■ Uni-Directional Electret
Condenser Microphone



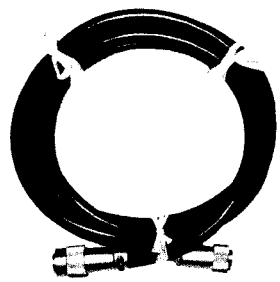
■ AC Adaptor
(WV-PS30)



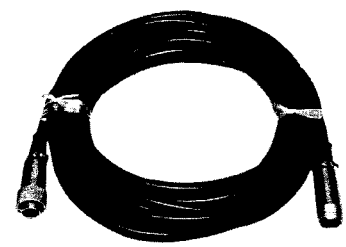
■ Battery Pack
(WV-PS36)



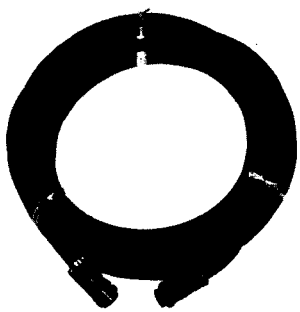
■ 14P-10P VTR Cable
(WV-CA30)



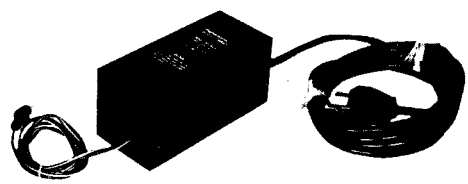
■ 10P VTR Extension Cable
(10H-25A/10H-50A)



■ Studio (Extension) Cable
(32A-25/32A-50/32A-100)



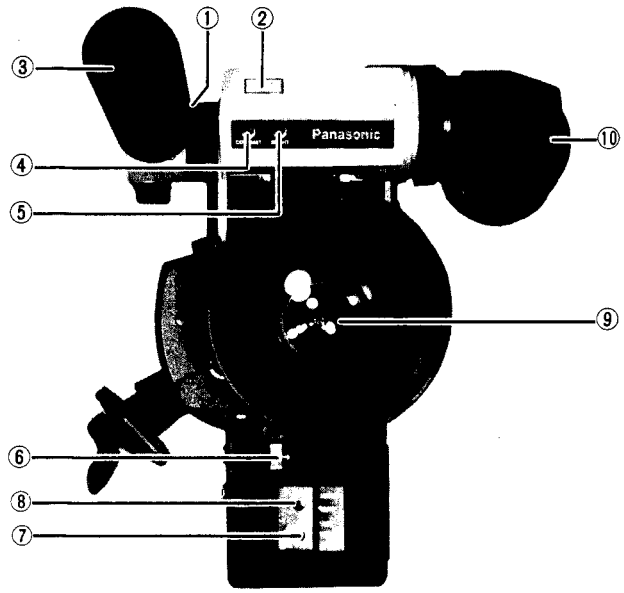
■ Slow Battery Charger
(WV-BC30)

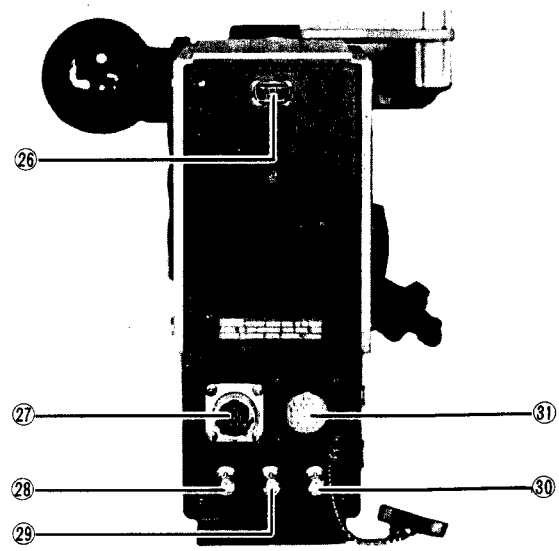


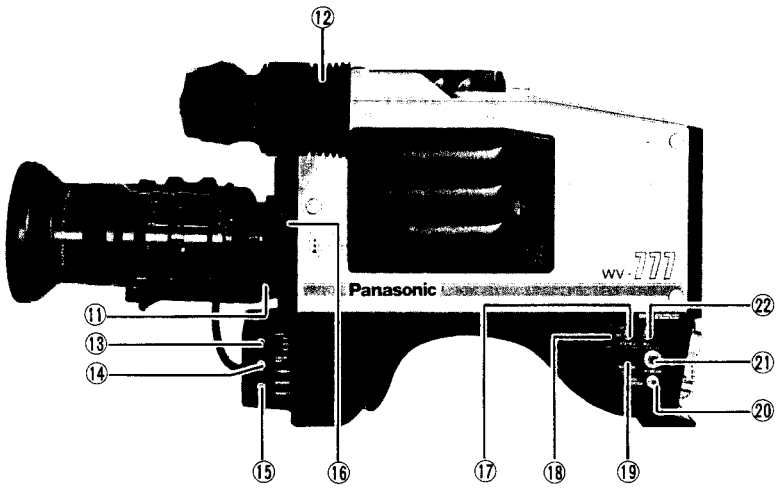
■ Carrying Case
(WV-CC30)

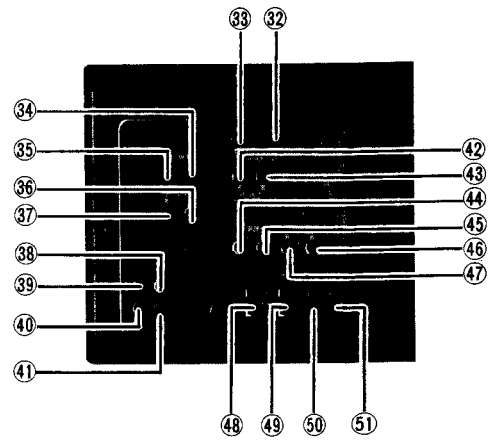
MAJOR OPERATING CONTROLS

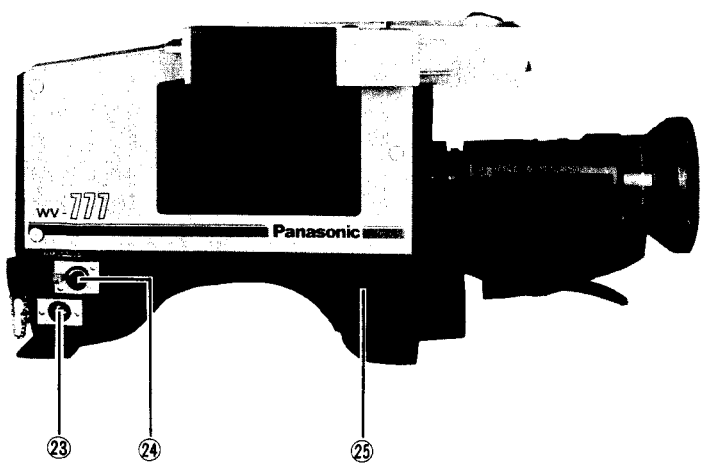
ENG Colour Camera System WV-777

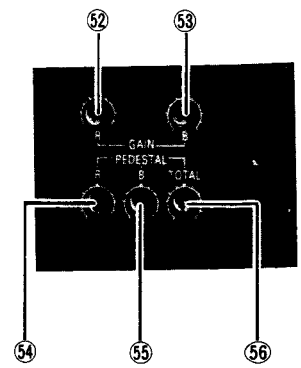












CONTROLS AND THEIR FUNCTIONS

ENG Colour Camera WV-777

① Accessory Mounting Hole
This mounting hole (3/8"-16) is used for mounting a light source.

② Tally Lamp
This tally lamp is operated when this unit is used in full system operation with optional remote control unit and special effects generator or is used in conjunction with the Panasonic portable VTR. The tally lamp indicates to the camera operator, RCU operator and other people that the camera is actually shooting the scene.

③ Microphone
This is the pick-up for the supplied microphone. The microphone is most sensitive to sounds coming from the direction in which the camera is pointed. Insert AA size battery into the microphone before installing it into the mic connector/holder.
Change the battery every 6 months.

④ Contrast Control [CONTRAST]
Turn this control clockwise to increase the picture contrast only in the viewfinder.

⑤ Brightness Control [BRIGHT]
Turn this control clockwise to increase the picture brightness only in the viewfinder.

⑥ Lens Connector [LENS]
This lens connector is used for connecting the auto iris power servo control zoom lens which automatically adjusts incoming light intensity by changing lens iris.

⑦ Auto White/Auto Black Set Switch [AWC/HOLD/ABC]
When the auto/manual selection switch ⑧ is set to the AUTO position, this switch sets the white balance and black balance automatically as;

AWC : This position is used for setting the white balance. While aiming the camera at a white object, press this switch up momentarily to activate automatic white balance setting. The white balance is automatically set in approximately 5 seconds. The colour conversion warning (CCW) indicator in the viewfinder is flashing while the white balance is being set and it goes off when the white balance setting is completed. If the CCW indicator remains ON, reset the white balance after confirming the position of filter wheel ⑯ referring to the table on page 38. The white balance set at this position is held for a long period of time even after power switch is turned OFF. Therefore, if the colour temperature of the object/scene condition remains same, it is unnecessary to reset the white balance. When the colour temperature is changed from indoor to outdoor, for example, the white balance should be reset.

HOLD : This position holds the white balance and black balance set at the AWC and ABC position for a long period of time.

ABC : This position is used for setting the black balance. Press this switch down momentarily to activate automatic black balance setting. The lens iris is automatically closed for blocking the incoming light when the power servo control zoom lens is set in the auto iris mode and the black balance is set automatically in approximately 5 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position. If the lens iris is set in the manual control mode, the incoming light should be blocked by closing the lens iris manually setting the filter wheel ⑯ to No. 4 (CLOSE) or capping the lens.

⑧ Auto/Manual Selection Switch [AUTO/MANUAL]
This switch selects the operational condition of the white balance and black balance as;

AUTO : The white balance and black balance are automatically set by the auto white/auto black set switch ⑦.

MANUAL : The white balance is manually set by adjusting the red gain control ⑫ and blue gain control ⑬, and the black balance is also manually set by adjusting the red pedestal control ⑭ and blue pedestal control ⑮.

⑨ Auto Iris Power Servo Control Zoom Lens
This is an f10 - 120 mm lens with automatic & manual iris control and power servo control zoom which has a special mount and F1.6 maximum aperture. The picture size can be magnified 12 times with use of the zoom feature. Just rotate the zoom/macro ring for a close up or wide angle. The enlarged close up picture at macro function can be made at a distance of up to 2 inch (5 cm).

⑩ Electronic Viewfinder (Tiltable)

This is a small (1-3/8") TV monitor showing the actual picture which the lens sees. The viewfinder is tiltable and can be adjusted to upward or downward turn (approximately 90°) each from horizontal position.

⑪ Lens Hold Ring/Knob

Turn this ring/knob clockwise to hold the lens tightly.

⑫ Eye Cap

Blocks out external light. Rotate the eye cap for the best eye focal distance.

⑬ High Gain Selection Switch [0 dB/+6 dB/+12 dB]

Normally set this switch to 0 dB position. +6 dB or +12 dB position increases the video output amplitude on the dark scene which is approximately equivalent to opening the lens one or two F stops.

⑭ Colour Bar/Camera Selection Switch [BAR/CAMERA]

This switch selects the video output signal as;

BAR: The EBU colour bar is displayed from the video output connector ㉙, 14P VTR connector ㉗ and 32P RCU connector ㉛.

CAMERA : The actual picture which the lens sees is displayed.

⑮ Standby/Operate Selection Switch [STANDBY/OPERATE]

This switch selects the operating condition for camera as;

STANDBY : The camera circuit is turned OFF to conserve the battery, except for the heater of the pick-up tube and viewfinder CRT.

OPERATE : The unit is in operating condition after necessary adjustments.

⑯ Filter Wheel Cover

To set the filter wheel, flip-open this cover.

The filter wheel is a four position wheel which has two built-in colour temperature conversion filters and one ND filter as;

(1) 3200°K - indoor light

(2) 5600°K+ 12.5% ND - daylight (sunny)

(3) 5600°K - daylight (cloudy/rainy)

(4) Close

Select the position according to the light source which illuminates the scene being shot (see page 38).

⑰ Power Selection Switch

This switch selects the power source as;

EXT/BATT/AC ADP : This position is used for AC adaptor, battery pack or external DC through external DC input connector.

OFF : The power source is off.

VTR/RCU : This switch is used for selecting the power source from VTR built-in battery or RCU.

⑱ Power Indicator [POWER]

This indicator lights red when the camera is in operating condition. When the camera is in the standby mode, the indicator lights green.

⑲ Intercom Level Control [INTERCOM LEVEL]

Turn this control to have optimum sound level for the headset connecting to the intercom jack ㉑.

⑳ Audio Monitoring Jack [AUDIO MONITOR]

When the earphone is connected, the sound of mic input ③, ㉔ can be monitored.

㉑ Intercom Jack [INTERCOM]

This intercom jack is used for intercommunication between camera operator and RCU operator in system operation with special effects generator.

㉒ VTR-RCU Selector Switch [VTR/RCU]

This switch selects the functions for portable VTR or RCU as;

VTR : The video output signals are provided by video output connector ㉙ and 14P VTR connector ㉗.

RCU : The video output signals are provided by video output connector ㉙ and 32P RCU connector ㉛.

㉓ External DC Input Connector (EXT DC)

This connector is used for connecting a cable from an external DC nominal 12V power source (a car battery for example).

㉔ Mic Input Connector [MIC -70 dB]

This connector is for external microphone. The mic input connector is Canon(XLR) type.

Note : When the external microphone is used, it is recommended to disconnect the microphone ③ since the audio output level is decreased, due to the audio mixing.

㉕ Backup Battery Case

Two pieces of silver oxide batteries are used as backup batteries to hold the white balance and black balance set by the auto white/auto black set switch ⑦. Following battery can be used. Change the batteries every 2 years.

Manufacturer	Model No.
Panasonic	SR44 (G13)
NEDA	1107SOP
Duracell	MS76
Eveready	EPX76
Ray-O-Vac	RS76

Note : 1. Before operating the camera, install the batteries (supplied) into the case while referring to INSTALLATION FOR BATTERIES on page 22.
2. Remove the battery when the camera is not used for a long period of time.

㉖ Battery Connector

This battery connector is for connecting the AC adaptor or optional battery pack.

㉗ 14P VTR Connector [VTR]

When used in conjunction with a Panasonic portable colour VTR, 14P-10P VTR cable is connected between the camera and portable colour VTR.

㉘ Gen-Lock Input Connector (BNC) [GEN-LOCK]

The colour video signal of the camera is synchronized to the signal (black burst) which is introduced into this connector from the system reference signal. The synchronization to the system reference signal is necessary for EFP (Electronic Field Production) and system operation.

㉙ Video Output Connector (BNC) [VIDEO OUT]

PAL composite video signal which conforms to PAL specifications is provided at this connector.

㉚ Monitoring Video Output Connector (BNC) [PIX OUT]

Following signals are provided at this connector by selecting the switches (㊽, ㊾, ㊿) regardless of the signal at the video output connector.

PAL, Red, Green, Blue, R-G, B-G or Aux

㉛ 32P RCU Connector [RCU]

The 32P camera cable is connected between the camera and remote control unit (RCU) for system operation.

㉜ Blue Horizontal Size Control [B H-SIZE]

Horizontal size for blue signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㉝ Red Horizontal Size Control [R H-SIZE]

Horizontal size for red signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㉞ Blue Horizontal Linearity-1 Control [B H-LIN-1]

Horizontal linearity of scanning start portion for the blue signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㉟ Red Horizontal Linearity-1 Control [R H-LIN-1]

Horizontal linearity of scanning start portion for the red signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊱ Blue Vertical Linearity Control [B V-LIN]

Vertical linearity for blue signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊲ Red Vertical Linearity Control [R V-LIN]

Vertical linearity for red signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊳ Blue Horizontal Centering Control [B H-CENTERING]

Horizontal centering for blue signal can be adjusted by this control for registration adjustment.

㊴ Red Horizontal Centering Control [R H-CENTERING]

Horizontal centering for red signal can be adjusted by this control for registration adjustment.

㊵ Red Vertical Centering Control [R V-CENTERING]

Vertical centering for red signal can be adjusted by this control for registration adjustment.

㊶ Blue Vertical Centering Control [B V-CENTERING]

Vertical centering for blue signal can be adjusted by this control for registration adjustment.

㊷ Red Horizontal Linearity-2 Control [R H-LIN-2]

Overall horizontal linearity for red signal can be adjusted by this control for registration. Refer for adjusting the control to qualified service personnel.

㊸ **Blue Horizontal Linearity-2 Control [B H-LIN-2]**
Overall horizontal linearity for blue signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊹ **Red Vertical Size Control [R V-SIZE]**
Vertical size for red signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊺ **Blue Vertical Size Control [B V-SIZE]**
Vertical size for blue signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊻ **Blue Skew Control [B SKEW]**
Skew for blue signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊼ **Red Skew Control [R SKEW]**
Skew for red signal can be adjusted by this control for registration adjustment. Refer for adjusting the control to qualified service personnel.

㊽ **Monitoring Signal Selection Switch [SIGNAL SELECT]**
This switch selects the signal displayed on the viewfinder and provided at the monitoring video output (PIX OUT) ㉚. When the camera is used with the Panasonic portable VTR, if the portable VTR is set to the playback mode, the playback picture of portable VTR is displayed on the viewfinder regardless of selection of this switch.

ENC : Encoded (PAL) signal is displayed on the viewfinder and is provided at the monitoring video output.

REG : Red, Green, Blue, R-G or B-G signal is displayed on the viewfinder and is provided at the monitoring video output by selecting the registration switch ㊾ and -G ON/OFF switch ㊿ for registration adjustment.

AUX : Auxiliary signal such as lineview signal from a special effects generator or VTR playback signal supplied to the auxiliary connector ⑪① of the remote control unit (RCU) in the system operation is displayed on the viewfinder and is provided at the monitoring video output.

㊾ **Registration Switch [REG R/G/B]**
When the monitoring signal selection switch ㊽ is set to the REG position, red, green or blue signal is displayed on the viewfinder and is provided at the monitoring video output ㉚ by selecting this switch.

㊿ **-G ON/OFF Switch [-G/OFF]**
When the monitoring signal selection switch ㊽ is set to the REG position, red, green, blue, R-G or B-G signal is displayed on the viewfinder and is provided at the monitoring video output ㉚ by selecting this switch and registration switch ㊾ for registration adjustment.

(51) **Detail ON/OFF Switch [DETAIL/OFF]**
This switch is set to the ON position in the normal operating condition. When the registration adjustment is required, set this switch to the OFF position for better viewing.

(52) **Red Gain Control [R GAIN]**
White balance can be set manually by this control and the blue gain control (53) when the auto /manual selection switch ⑧ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the R signal level. At the center position, the R signal level is preset to the standard level.

(53) **Blue Gain Control [B GAIN]**
White balance can be set manually by this control and the red gain control (52) when the auto/manual selection switch ⑧ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the B signal level. At the center position, the B signal level is preset to the standard level.

(54) **Red Pedestal Control [R PEDESTAL]**
Black balance can be set manually by this control and the blue pedestal control (55) when the auto /manual selection switch ⑧ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the R pedestal level. At the center position, the R pedestal level is preset to the standard level.

(55) **Blue Pedestal Control [B PEDESTAL]**
Black balance can be set manually by this control and the red pedestal control (54) when the auto /manual selection switch ⑧ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the B pedestal level. At the center position, the B pedestal level is preset to the standard level.

⑯ **Total Pedestal Control [TOTAL PEDESTAL]**
This control can adjust the pedestal level of video signal (luminance) regardless of position of the auto/manual selection switch ⑧. Turn this control clockwise (or counterclockwise) to increase (or decrease) the pedestal level. At the center position, the pedestal level is preset to the standard level.

⑰ **Tally ON/OFF Switch [TALLY ON/OFF]**
This switch turns ON/OFF the tally lamp ② located in front of the viewfinder.

⑱ **Peaking ON/OFF Switch [PEAKING ON/OFF]**
This switch is set to the OFF position in the normal operating condition. When the camera is aimed at a weakly illuminated scene, set the switch to the ON position so that focusing of picture in the viewfinder is easily made.

⑲ **Viewfinder Connector**
Connect this connector to a viewfinder receptacle on the camera.

⑳ **Level Indicator**
This horizontal line indicates the level of PAL output signal.

㉑ **Battery Warning/High Gain Indicator (Orange) [BATT/H. G]**
This LED is located in front of viewfinder CRT. The LED lights when the high gain selection switch ⑬ is set to the +6 dB or +12 dB position. When the LED is flashing, the battery can supply power for only a few minutes before the camera does not operate normally.

㉒ **Recording/Tally Indicator (Red) [REC/T]**
This LED is operated when this unit is used in full system operation with optional remote control unit and special effects generator or is used in conjunction with the Panasonic portable VTR. The LED indicates to the camera operator that the camera is actually shooting the scene.

㉓ **Colour Conversion Warning Indicator [C.C.W]**
This indicator lights when the white balance is unbalanced by improper selection of colour temperature conversion filter at automatic white balance setting. The indicator is flashing while white balance is being automatically set.

㉔ **Horizontal Phase Control for Gen-Lock (Internal) [H-PHASE]**
The horizontal phase of camera signal is adjusted to match the H phase of the signal at gen-lock connector ㉘. Refer for adjusting the control to qualified service personnel.

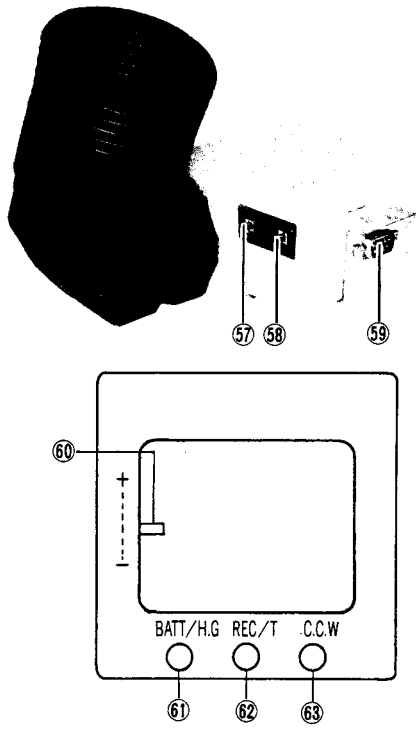
㉕ **Subcarrier Phase Fine Control for Gen-Lock (Internal) [SC-PHASE]**
This control allows fine adjustment of the subcarrier phase set by the subcarrier phase coarse switch ㉖. It gives continuous control of up to plus 120° subcarrier phase to match the phase of subcarrier signal at the gen-lock connector ㉘. Refer for adjusting the control to qualified service personnel.

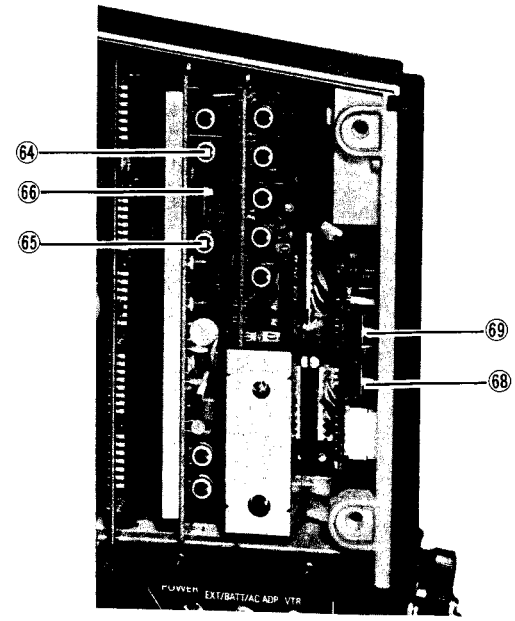
㉖ **Subcarrier Phase Coarse Switch for Gen-Lock (Internal)**
The subcarrier phase of the camera signal is adjusted from 0° to 360° in 120° step with this switch for matching the phase of subcarrier signal at the gen-lock connector ㉘. Refer for setting the switch to qualified service personnel.

㉗ **VTR Compatibility Switch (Internal)**
The logic level of the camera trigger for different polality of VTR may be incompatible and reversed, so that the VTR pauses when it should run and vice versa. In this case, the trigger polality can be reversed by this switch internally. It is factory-set to the ⊕ (Panasonic) position. Refer for resetting the switch to qualified service personnel.

㉘ **Audio Level Selection Switch (Internal)**
The audio output level for VTR can be selected -20 dB or -70 dB internally. It is factory-set to the -20 dB position. Refer for resetting the switch to qualified service personnel.

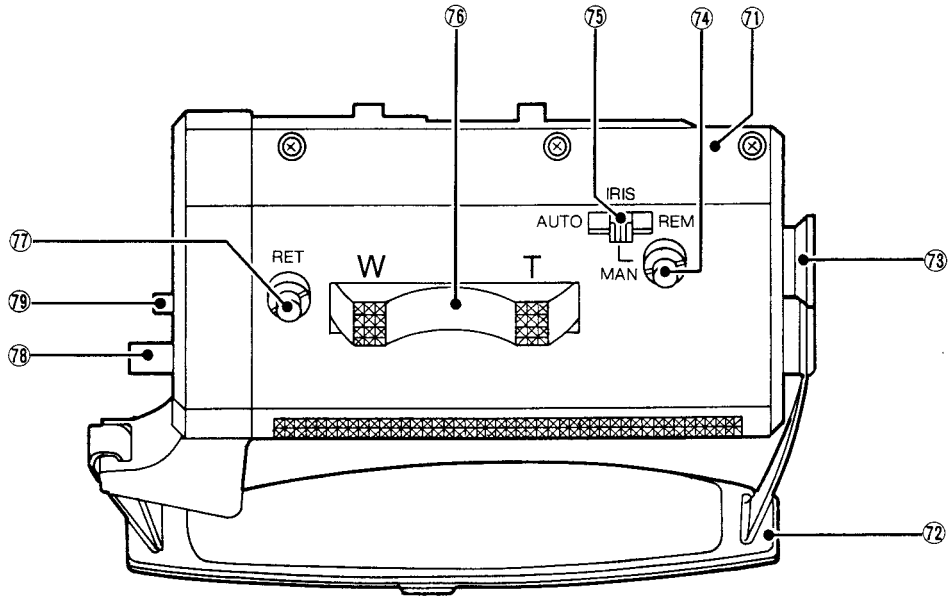
㉙ **Audio Monitoring Selector Switch (Internal)**
When this switch is set to the MIC (lower) position, the sound of mic input ③ or ㉔ can be monitored through the audio monitoring jack ⑳. The playback audio from the VTR through 14P cable (Playback audio : Pin 14) may be possible to monitor when the switch is set to the PLAYBACK (upper) position. It is factory-set to the MIC position. Refer for resetting the switch to qualified service personnel.

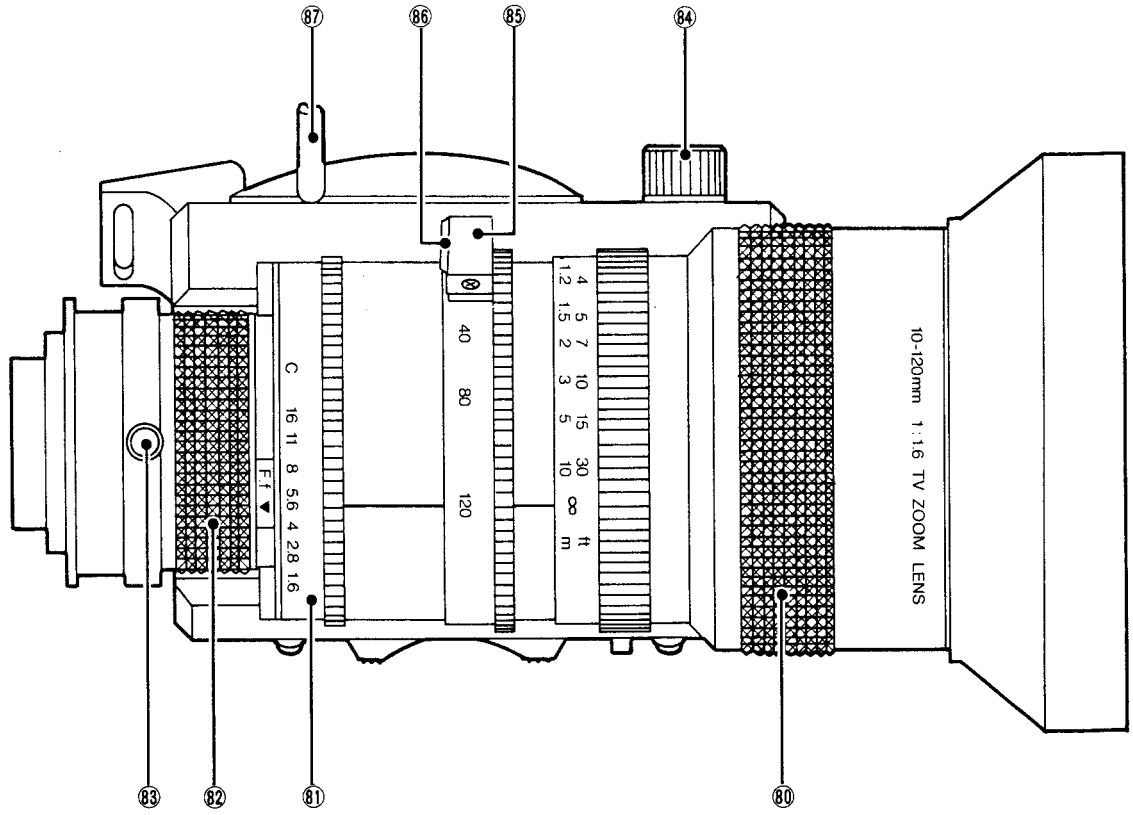

57
58
59
60
+
BATT/H.G
REC/T
C.C.W
61
62
63


64
66
65
69
68
EXT/BATT/AC ADP VTR

MAJOR OPERATING CONTROLS

Auto Iris Power Servo Control Zoom Lens





Auto Iris Power Servo Control Zoom Lens

⑦① Power Servo Zoom Unit
This is a control unit for the power servo zoom of the lens.

⑦② Hand Strap
This hand strap securely holds the camera. The length of the hand strap can be adjusted.

⑦③ Servo/Manual Zoom Select Knob
The power servo zoom control or manual zoom control can be selected by setting this knob.
- For power servo control zoom, push the knob to SERVO position.
- For manual zoom control, pull the knob to MANUAL position.

⑦④ Auto Iris Button
Lens iris is automatically set according to the incoming light intensity while this button is being pushed when the iris control selection switch ⑦⑤ is set in the MAN(manual) position.

⑦⑤ Iris Control Selection Switch (IRIS AUTO/MAN/REM)
This switch selects the operational condition of the lens iris of auto iris power servo control zoom lens.
AUTO : Lens iris is automatically controlled.
MAN : Lens iris is manually controlled by rotating the iris ring ⑧① or it is automatically controlled while the auto iris button ⑦④ is being pushed.
REM : When used with the RCU, set the switch to this position. Lens iris is remotely controlled from the RCU.

⑦⑥ Power Servo Zoom Control (Wide/Tele)
The 12:1 zoom lens can be controlled by pressing this control to zoom in/out for wide/tele picture with motor drive.

⑦⑦ Return Video Button
When the auxiliary signal such as lineview signal from a special effects generator is supplied to the auxiliary connector ⑫① of the remote control unit (RCU) in the system operation, the lineview signal is displayed on the viewfinder and is provided at the monitoring video output connector ③⓪ regardless of positions of switches (④⑧, ④⑨, ⑤⓪) while this switch is being pressed.

⑦⑧ Auto Iris Level Fine Control
Auto iris level can be fine-controlled by adjusting this control when the iris control selection switch ⑦⑤ on the lens is set in the AUTO position.

⑦⑨ VTR Start/Stop Button
This switch is used to start or pause the recorder. Press the FWD/PLAY and REC buttons on the recorder. Press the Start/Stop Button once to record, press again to pause. The recording/tally indicator in front of CRT viewfinder lights when the recording is in progress. This switch is useful only when 14P-10P VTR cable is actually connected to the Panasonic portable colour VTR.

⑧⓪ Focus Ring
Turning the ring located on the lens will change the lens focus. Focusing the lens of the camera will change the viewfinder picture. To be sure the object is in focus, observe the picture on your viewfinder and adjust the focus ring.
With optional lens control kit, the focus can be remote-controlled by the flexible cable and focus controller.

⑧① Iris Ring
- The iris indicators on the lens are as follows;
  1.6, 2, 2.8, 4, 5.6, 8, 11, 16, C
- The iris indicators 1.6 - 16 and C(close) shows the iris opening.
- If the iris control selection switch ⑦⑤ is set in the MAN(manual) position, the iris ring can be rotated manually.

⑧② Flangeback Adjusting Ring
Flangeback of the lens can be adjusted by rotating this ring after loosening the flangeback lock knob ⑧③.

⑧③ Flangeback Lock Knob
It locks the flangeback adjusting ring ⑧②.

⑧④ Connector for Zoom Remote Controller
Zoom remote controller of lens control kit is connected to this connector and zooming is remote-controlled.

⑧⑤ Zoom Ring/Lever
For Manual Zooming:
- By pulling the Servo/Manual Zoom Select Knob ⑦③ to Manual position, the picture size can be manually magnified 12 times with the use of zoom feature. Just rotate the zoom ring for close up-(Tele) or wide angle(Wide) picture.

For Power Zooming:

- By pushing the Servo/Manual Zoom Select Knob ⑬ to Servo position, the 12:1 zoom lens allows you to Zoom in/out for closer(tele)/wider picture with motor drive, which is activated by the Power Servo Zoom Control ⑯.
- With optional lens control kit, the power zoom can be controlled remotely.

⑯ Macro Knob

For close up picture, set the lens to the macro function by pushing this knob after the Servo-/Manual Zoom Select Switch ⑬ is set (pulling) to Manual position. The camera can shoot objects at a distance as close as 2" (5 cm).

CAUTION : (1) Do not zoom the lens during macro function. You will lose focus, because during macro function, the backfocus of the lens is changed.

(2) The macro function will be automatically released when zooming the lens.

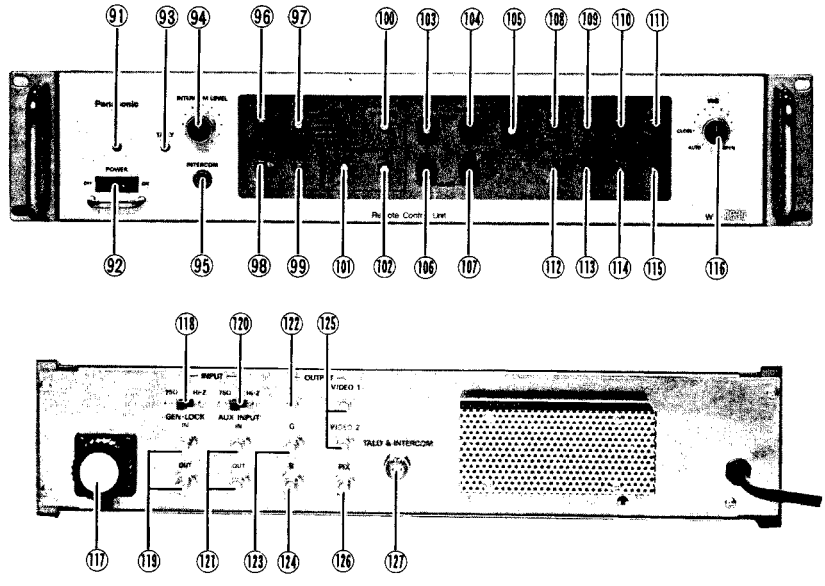
⑰ Lens Cable with 8 pin Connector

This cable provides the power source for power servo control zoom motor and the iris control signal which automatically adjusts incoming light intensity falling on the pick-up tube by changing iris.

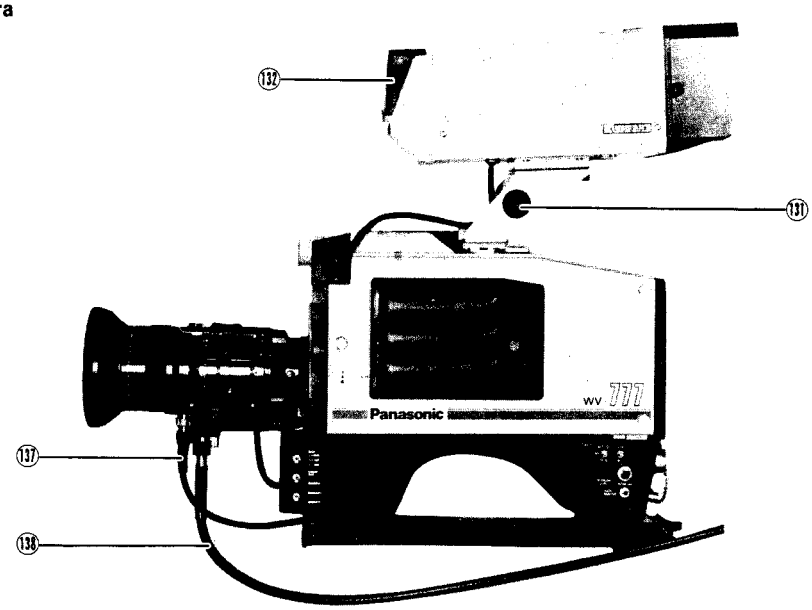
MAJOR OPERATING CONTROLS

Studio Camera System/Main Optional Accessories

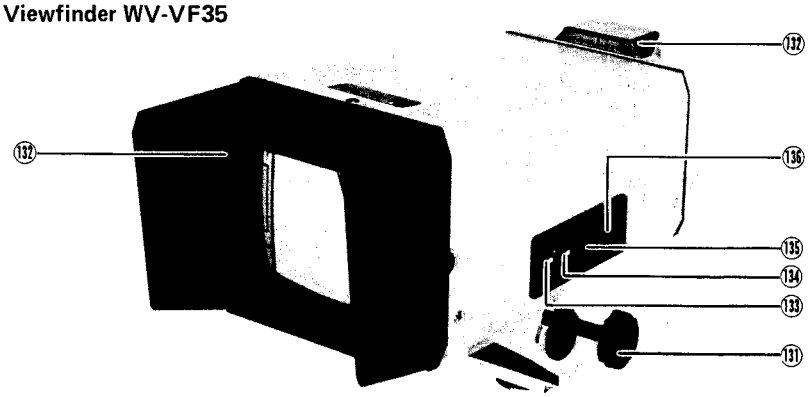
- **Remote Control Unit (RCU) WV-RC30**



- **Studio Camera**



- **5" Electronic Viewfinder WV-VF35**



Optional Remote Control Unit (RCU) WV-RC30

⑨① Power Indicator
This indicator comes on whenever the unit is operated.

⑨② Power ON/OFF Switch [POWER]
This switch activates power for the RCU.

⑨③ Tally Indicator [TALLY]
When RCU is used in conjunction with special effects generator, the tally indicators on the viewfinder and RCU indicate to the camera operator, RCU operator and other people that this camera system is actually shooting the scene.

⑨④ Intercom Level Control [INTERCOM LEVEL]
Turn this control to have optimum sound level for the headset connecting to the intercom jack ⑨⑤.

⑨⑤ Intercom Jack [INTERCOM]
This is used for intercommunication between camera operator and RCU operator in system operation with special effects generator.

⑨⑥ Camera/Colour Bar Selection Switch [BAR /CAMERA]
When used in a system, this switch can select the camera mode or colour bar mode regardless of the selection switch ⑭ on the camera head.

BAR : The EBU colour bar is provided from the video output connectors ⑫⑤ on the RCU.

CAMERA : The system is in operating condition after necessary adjustments.

⑨⑦ Cable Length Compensation Switch [CABLE COMP]
This switch is used for 32P studio cable compensation between the camera head and RCU as;

50m (150ft):	Cable length less than 150ft (50m)
100m (300ft):	Cable length 150 – 300ft (50 – 100m)
200m (600ft):	Cable length 300 – 600ft (100 – 200m)
300m (1000ft):	Cable length 600 – 1000ft (200 – 300m)

⑨⑧ Auto White/Auto Black Set Switch [AWC/HOLD/-ABC]

AWC : This position is used for setting the white balance. While aiming the camera at a white object, press this switch up momentarily to activate automatic white balance setting. The white balance is automatically set in approximately 5 seconds. The color conversion warning (CCW) indicator in the viewfinder is flashing while the white balance is being set and it goes off when the white balance setting is completed. If the CCW indicator remains ON, reset the white balance after confirming the position of filter wheel ⑯ referring to the table on page 38. The white balance set at this position is held for a long period of time even after power switch is turned OFF. Therefore, if the colour temperature of the object/scene condition remains same, it is unnecessary to reset the white balance. When the colour temperature is changed, from indoor to outdoor for example, the white balance should be set.

HOLD : This position holds the white balance and black balance set at the AWC and ABC position for a long period of time.

ABC : This position is used for setting the black balance. Press this switch down momentarily to activate automatic black balance setting. The lens iris is automatically closed for blocking the incoming light when the power servo control zoom lens is set in the remote (REM) iris mode and the lens iris control ⑪⑥ to the Auto position, and the black balance is set automatically in approximately 5 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position. If the lens iris is set in the manual control mode, the incoming light should be blocked by closing the lens iris manually, setting the filter wheel ⑯ to No. 4 (CLOSE) or capping the lens.

⑨⑨ Auto/Manual Selection Switch [AUTO/MANUAL]
This switch selects the operational condition of the white balance and black balance as;

AUTO : The white balance and black balance are automatically set by the auto white/auto black set switch ⑨⑧

MANUAL : The white balance is manually set by adjusting the red gain control ⑩⑥ and blue gain control ⑩⑦, and the black balance is also manually set by adjusting the red pedestal control ⑩③ and blue pedestal control ⑩④.

⑩⓪ Horizontal Phase Control for Gen-lock [H PHASE]
The horizontal phase of the camera signal is adjusted to match the horizontal phase of the signal at the gen-lock connector ⑪⑨.

⑩① **Subcarrier Phase Coarse Switch for Gen-lock [SC PHASE COARSE]**

The subcarrier phase of the camera signal is adjusted from 0°to 360° in 90° steps with this switch for matching the phase of subcarrier signal at the gen-lock connector ⑪⑨.

⑩② **Subcarrier Phase Fine Control for Gen-lock [SC PHASE FINE]**

This control allows fine adjustment of the subcarrier phase previously set by the subcarrier phase coarse switch ⑩①. It gives continuous control of up to plus 90° subcarrier phase to match the phase of subcarrier signal at the gen-lock connector ⑪⑨.

⑩③ **Red Pedestal Control [R PEDESTAL]**

Black balance can be set manually by this control and the blue pedestal control ⑩④ when the auto/manual selection switch ⑨⑨ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the R pedestal level. At the center position, the R pedestal level is preset to the standard level.

⑩④ **Blue Pedestal Control [B PEDESTAL]**

Black balance can be set manually by this control and the red pedestal control ⑩③ when the auto/-manual selection switch ⑨⑨ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the B pedestal level. At the center position, the B pedestal level is preset to the standard level.

⑩⑤ **Total Pedestal Control [TOTAL PEDESTAL]**

This control can adjust the pedestal level of video signal (luminance) regardless of position of the auto/manual selection switch ⑨⑨. Turn this control clockwise (or counterclockwise) to increase (or decrease) the pedestal level. At the center position, the pedestal level is preset to the standard level.

⑩⑥ **Red Gain Control [R GAIN]**

White balance can be set manually by this control and the blue gain control ⑩⑦ when the auto/-manual selection switch ⑨⑨ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the R signal level. At the center position, the R signal level is preset to the standard level.

⑩⑦ **Blue Gain Control [B GAIN]**

White balance can be set manually by this control and the red gain control ⑩⑥ when the auto/-manual selection switch ⑨⑨ is set to the MANUAL position. Turn this control clockwise (or counterclockwise) to increase (or decrease) the B signal level. At the center position, the B signal level is preset to the standard level.

⑩⑧ **Monitoring Signal Selection Switch [SIGNAL SELECT]**

This switch selects the signal provided at the monitoring video output (PIX OUT) ⑫⑥.

ENC : Encoded (PAL) signal is provided at the monitoring video output.

REG : Red, Green, Blue, R-G or B-G signal is provided at the monitoring video output by selecting the registration switch ⑩⑨ and -G ON/OFF switch ⑪⑩ for registration adjustment.

AUX : Auxiliary signal such as lineview signal from a special effects generator or VTR playback signal supplied to the auxiliary input connector ⑫① of the remote control unit (RCU) is provided at the monitoring video output ⑫⑥.

Note : The signal displayed on the viewfinder and provided at the monitoring video output (PIX OUT) ③⓪ on the camera head is selected by the switches (④⑧ ④⑨, ⑤⓪) regardless of selection of this switch.

⑩⑨ **Registration Switch [REG R/G/B]**

When the monitoring signal selection switch ⑩⑧ is set to the REG position, red, green or blue signal is provided at the monitoring video output ⑫⑥ by selecting this switch.

⑪⓪ **-G ON/OFF Switch [-G/OFF]**

When the monitoring signal selection switch ⑩⑧ is set to the REG position, red, green, blue, R-G or B-G signal is provided at the monitoring video output ⑫⑥ by selecting this switch and registration switch ⑩⑨ for registration adjustment.

⑪① Detail ON/OFF Switch [DETAIL/OFF]
This switch is set to the ON position in the normal operating condition. When the registration adjustment is required, set this switch to the OFF position for better viewing.

⑪② Red Horizontal Centering Control [R H-CENTERING]
Horizontal centering for red signal can be adjusted by this control for registration adjustment.

⑪③ Blue Horizontal Centering Control [B H-CENTERING]
Horizontal centering for blue signal can be adjusted by this control for registration adjustment.

⑪④ Red Vertical Centering Control [R V-CENTERING]
Vertical centering for red signal can be adjusted by this control for registration adjustment.

⑪⑤ Blue Vertical Centering Control [B V-CENTERING]
Vertical centering for blue signal can be adjusted by this control for registration adjustment.

⑪⑥ Lens Iris Control [IRIS AUTO-CLOSE/OPEN]
This control selects the operational condition of auto iris power servo control zoom lens as;

AUTO : The iris level of auto iris power servo control zoom lens on the camera head is automatically controlled.

CLOSE/OPEN : The iris level of auto iris power servo control zoom lens on the camera can be manually controlled by turning this control.

Note : Iris control selection switch ⑦⑤ of auto iris power servo control zoom lens should be normally set to the REM(remote) position. If the iris control selection switch ⑦⑤ is set to the AUTO position, the auto iris level can be adjusted by turning this control. In this case, do not set this control to the AUTO position.

⑪⑦ 32P Camera Cable Connector
32P Camera Cable is connected between the camera head and RCU in system operation.

⑪⑧ Gen-Lock Input Termination Switch [75Ω/Hi-Z]
When bridging or looping through the gen-lock signal, set this switch in the Hi-Z position. Otherwise, set to 75Ω position.

⑪⑨ Gen-lock Input/Output Connector (BNC) [GEN-LOCK IN/OUT]
These connectors are used to supply the black burst signal from the system reference. Two connectors are convenient for bridging or looping through application.

⑫⓪ Auxiliary Input Termination Switch [75Ω/Hi-Z]
When bridging or looping through the auxiliary signal, set this switch in the Hi-Z position. Otherwise, set to 75Ω position.

⑫① Auxiliary Input/Output Connector (BNC) [AUX IN/OUT]
These connectors are used to supply the lineview signal from the special effects generator or VTR playback signal. Two connectors are convenient for bridging or looping through application.

⑫② Red Output Connector (BNC) [R OUTPUT]
This connector is used to provide the non-composite red video output signal for chroma keying.

⑫③ Green Output Connector (BNC) [G OUTPUT]
This connector is used to provide the non-composite green video output signal for chroma keying.

⑫④ Blue Output Connector (BNC) [B OUTPUT]
This connector is used to provide the non-composite blue video output signal for chroma keying.

⑫⑤ Video Output Connectors (BNC) [VIDEO OUTPUT]
These connectors are used to provide the PAL composite video output signals to the special effects generator, the video monitor or VTR.

⑫⑥ Monitoring Video Output (BNC) [PIX OUT]
Following signals are provided at this connector by selecting the switches (⑩⑧, ⑩⑨, ⑪⓪) regardless of the video output connectors.
PAL, Red, Green, Blue, R-G, B-G or Aux

⑫⑦ Tally and Intercom Input Connector [TALLY & INTERCOM]
The 4P cable is connected between this connector and the tally/intercom output of the special effects generator.

Optional 5" Viewfinder WV-VF35

⑬① Viewfinder Adjusting Knob
The angle of optional 5" viewfinder can be adjusted for easy viewing.

⑬② Tally Lamp
This tally lamp is operated only when this unit is used in full system operation with optional RCU and special effects generator. The tally lamp indicates the camera operator, RCU operator and other people that this camera system is actually shooting the scene.

⑬③ Peaking ON/OFF Switch [PEAKING ON/OFF]
This switch is set to the OFF position in the normal operating condition. When the camera is aimed at a weakly illuminated scene, set the switch to the ON position so that focusing of picture in the viewfinder is easily made.

⑬④ Tally ON/OFF Switch [TALLY ON/OFF]
This switch turns ON/OFF the tally lamp ⑬② located in front of the viewfinder.

⑬⑤ Brightness Control [BRIGHT]
Turn this control clockwise to increase picture brightness only in the viewfinder.

⑬⑥ Contrast Control [CONTRAST]
Turn this control clockwise to increase picture contrast only in the viewfinder.

Optional Lens Control Kit WV-LK30

⑬⑦ Cable for Zoom Remote Controller
The zooming of auto iris power servo control zoom lens can be remote-controlled for studio operation by connecting the zoom remote controller to the lens.

⑬⑧ Flexible Cable for Focus Controller
The focus of auto iris power servo control zoom lens can be remote-controlled for studio operation by installing the focus gear and focus controller to the lens.

INSTALLATION FOR ENG/EFP OPERATION

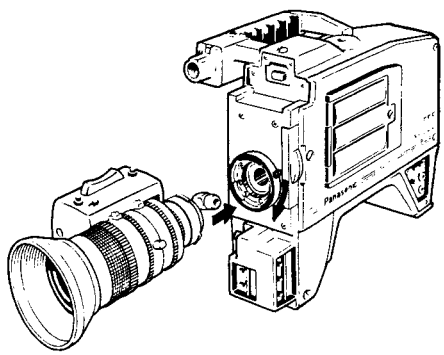
A. WV-777 ENG Colour Camera

WV-777 ENG colour camera is packed into a carrying case. For safe transportion, the microphone, AC adaptor and tripod mounting adaptor are not mounted on the camera head and are packed separately into the carrying case. Follow the steps 3 to 5 for assembly.

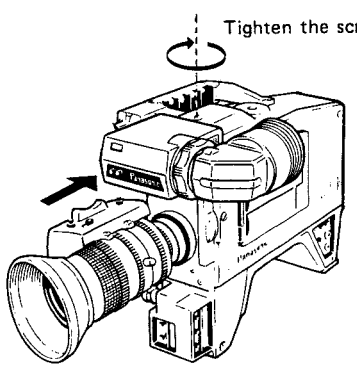
B. The ENG/EFP Colour Camera

Can be assembled with the camera head of studio configuration WV-777ST, 1.5" viewfinder WV-VF30, 12:1 auto iris power servo control zoom lens WV-LZ30/12, microphone WV-MC30, and AC adaptor WV-PS30 or battery pack WV-PS36. Follow the steps 1 to 5 for assembly

1. Mounting Lens WV-LZ30/12
   Remove the body cap by turning the lens hold ring/knob counterclockwise. Attach the optional 12:1 auto iris power servo control zoom lens WV-LZ30/12 into the lens mount and turn the lens hold ring/knob clockwise to hold the lens securely. Connect the lens cable to the lens connector.

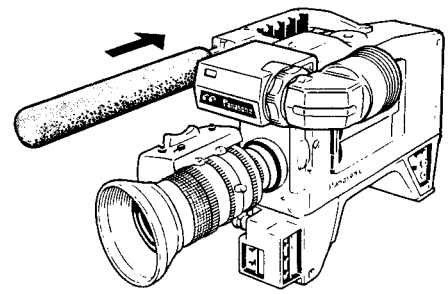


2. Mounting Viewfinder WV-VF30
   Attach the viewfinder on the front portion of the camera head and fasten with the fixing screw.



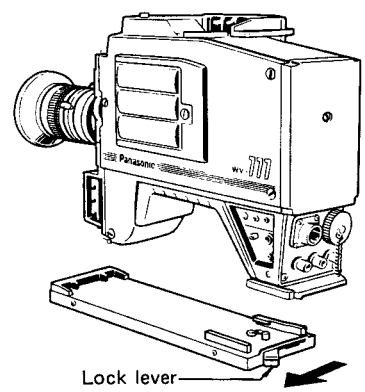
3. Mounting Microphone Wind Screen WV-MC30
   Remove the rubber cap from the mic connector/holder and attach the microphone WV-MC30 by sliding it into the mic connector/holder.

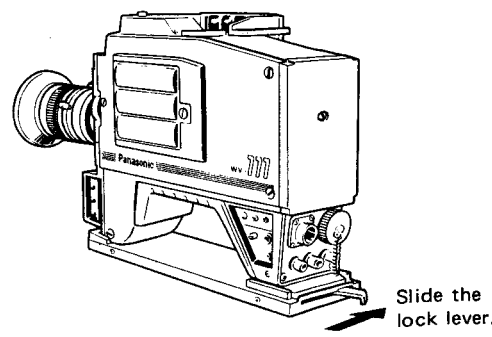
Note : Insert AA size battery (supplied) into the microphone before installing it while referring to INSTALLATION FOR BATTERIES on page 22. Change the battery every 6 months.



4. Mounting AC Adaptor or Battery Pack
   Refer to INSTALLATION FOR OPTIONAL AC ADAPTOR OR BATTERY PACK on page 23.

5. Mounting Tripod Mounting Adaptor
   Confirm that the lock lever on the tripod mounting adaptor is positioned at the left side (viewed from the rear). Place the camera head on the tripod mounting adaptor and lock the camera head by sliding the lock lever to the LOCK position.
   Note : When removing the tripod mounting adaptor, slide the lock lever to the left side while lifting up the lever and then slide the camera head slightly backward.



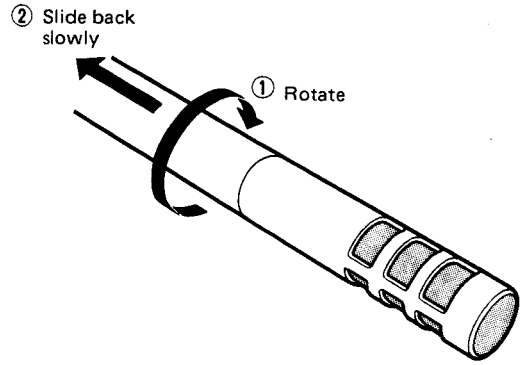


INSTALLATION FOR BATTERIES

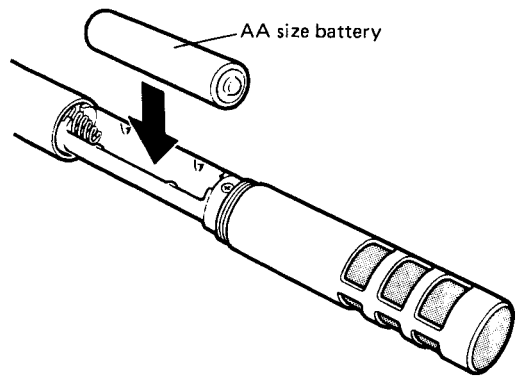
The battery for the microphone and the backup batteries for the white balance and black balance should be installed before operating the camera.

1. Battery for Microphone

- Rotate the microphone sleeve clockwise (viewed from the front) and slide it backward slowly.

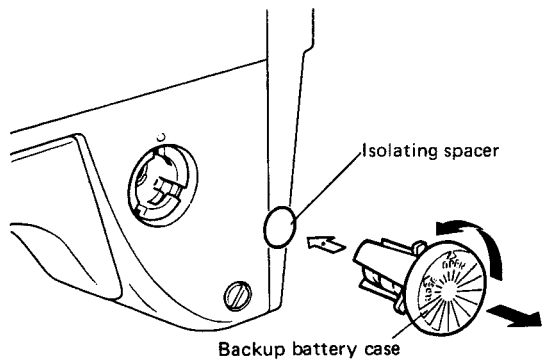


- Insert the AA size battery (supplied) into the battery compartment of microphone and install the microphone sleeve by rotating it counterclockwise.
  Note: Change the battery every 6 months.



2. Backup Batteries for White Balance and Black Balance

- Remove the backup battery case ㉕ from the holder by turning it counterclockwise while pushing.
- Remove the isolating spacer from the battery case.



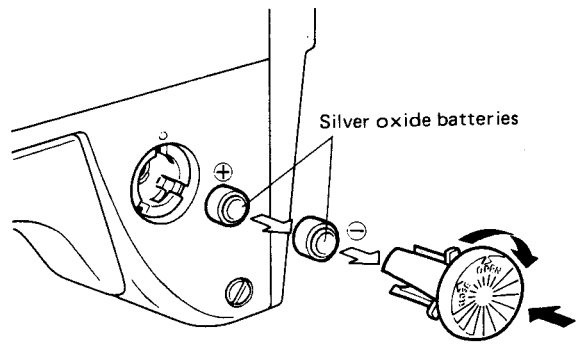
- Install the battery case to the holder by turning it clockwise while pushing.

  Note : 1. Change the batteries every two years.
  2. Remove the battery when the camera is not used for a long period of time.

3. Replacement of Backup Batteries for White Balance and Black Balance

- Remove the backup battery case ㉕ from the holder by turning it counterclockwise while pushing.
- Remove the silver oxide batteries from the battery case.
- Insert the two pieces of new silver oxide batteries into the battery case.
- Install the battery case to the holder by turning it clockwise while pushing.

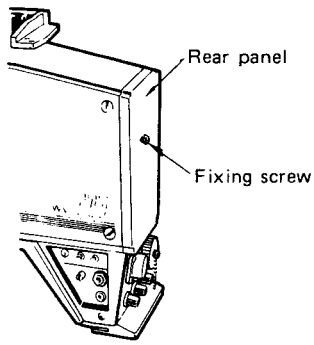
  Note : 1. Change the batteries every two years.
  2. Remove the battery when the camera is not used for a long period of time.



INSTALLATION FOR AC ADAPTOR OR BATTERY PACK

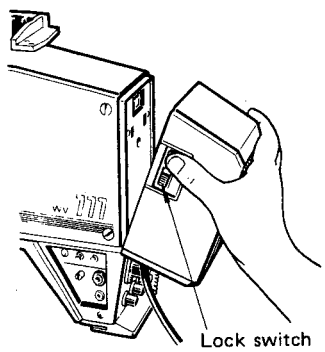
If the user wants to use the AC adaptor WV-PS30 or battery pack WV-PS36 with the ENG/EFP colour camera, the following installation procedures should be followed.

1. Remove the rear panel by unscrewing the fixing screw.

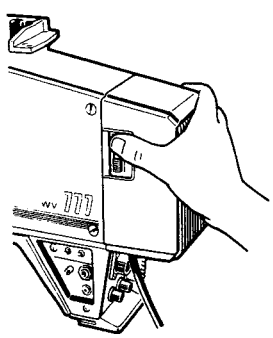


2. Set the lock switch of the AC adaptor or battery pack to the OPEN position.

3. Engage the protruding portion at the lower part of the AC adaptor or battery pack with the slit at the rear chassis of the camera head.



4. While pushing the mounting switch attach the AC adaptor or battery pack onto the camera head.



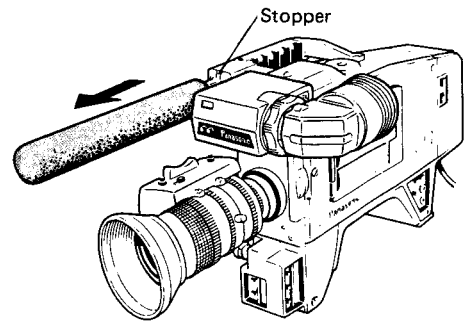
5. Set the lock switch to the LOCK position.

INSTALLATION FOR STUDIO OPERATION

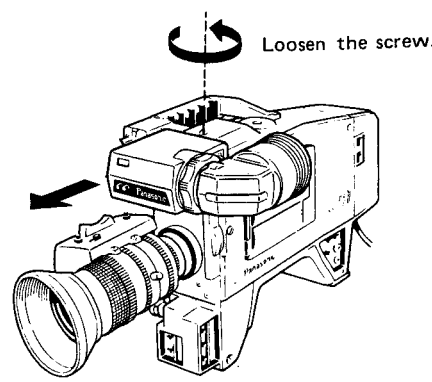
A. Conversion from ENG Camera
The studio camera can be converted from the ENG camera and outfitted with optional 5" viewfinder WV-VF35, RCU WV-RC30 and lens control kit WV-LK30. To do that, follow the procedure from step 1 to 8.

B. The studio camera is assembled with studio configuration WV-777ST which consists of a camera head, 5" viewfinder and RCU, optional 12:1 auto iris power servo control zoom lens WV-LZ30/12 and lens control kit WV-LK30. Follow steps 4 to 8.

1. Disassembling Microphone
Disconnect the microphone ③ from the mic connector/holder while pushing the stopper.



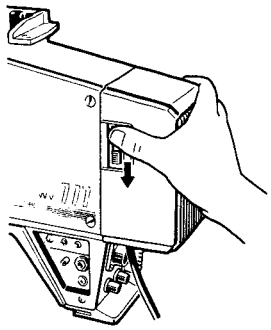
2. Disassembling 1.5" Viewfinder
Loosen the screw on the top of the camera head. Pull out the viewfinder by sliding out toward the front of the camera head.

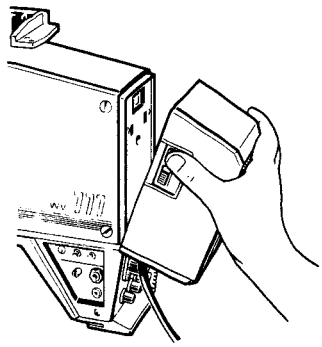


3. Disassemble AC Adaptor or Battery Pack

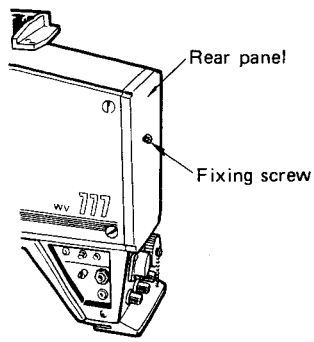
- Set the lock switch on the AC adaptor or battery pack to the OPEN position.

- While pushing the mounting switch disassemble the AC adaptor or battery pack from the camera head.



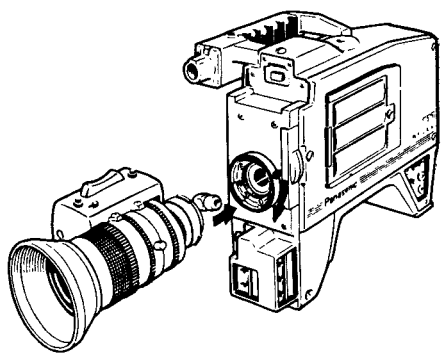


- Attach the rear panel with the fixing screw.



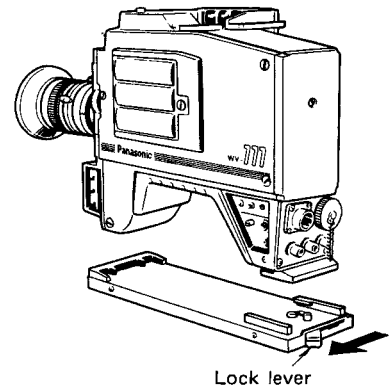
4. Mounting Lens for WV-777ST

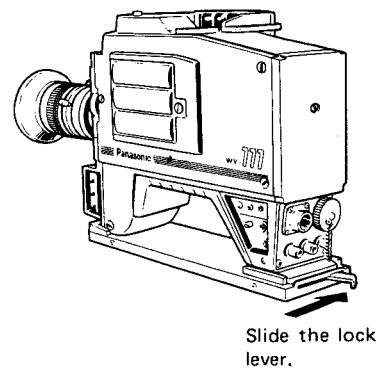
Remove the body cap by turning the lens hold ring/knob counterclockwise. Attach the auto iris power servo control zoom lens into the lens mount and turn the lens hold ring/knob clockwise to hold the lens securely. Connect the lens cable to the lens connector.



5. Mounting Tripod Mounting Adaptor

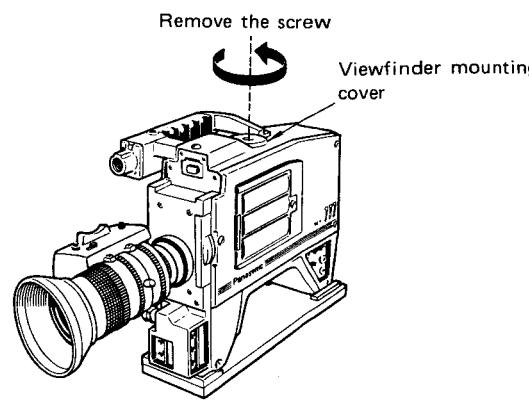
Set the lock lever on the tripod mounting adaptor to the left side (viewed from the rear). Place the camera head on the tripod mounting adaptor and lock the camera head by sliding the lock lever to the LOCK position.



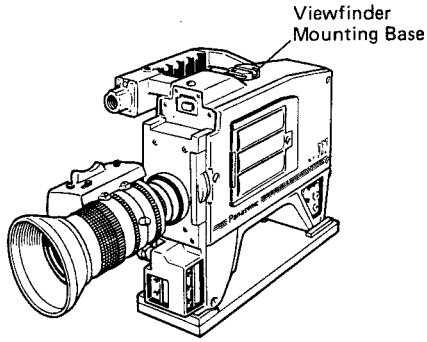


6. Mounting Optional 5" Viewfinder

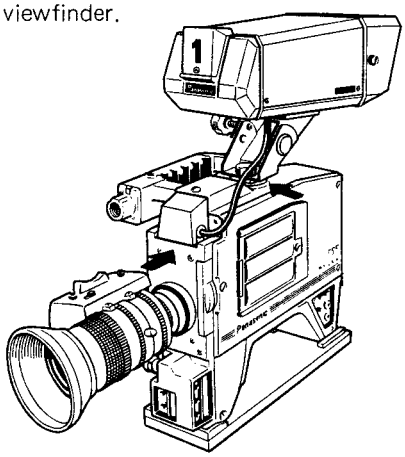
Remove the viewfinder mounting cover from the top of the camera head by removing the screw.



- Attach the round viewfinder mounting base to the top of the camera head with two screws.

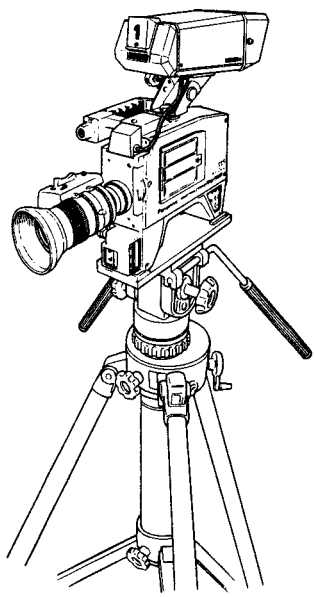


- Attach the viewfinder connector block on the front portion of the camera head and fasten with the fixing screw. Slide the viewfinder adjusting angle into the mounting base and tighten the fixing knob to secure the viewfinder.



7. Mounting Camera on a Tripod

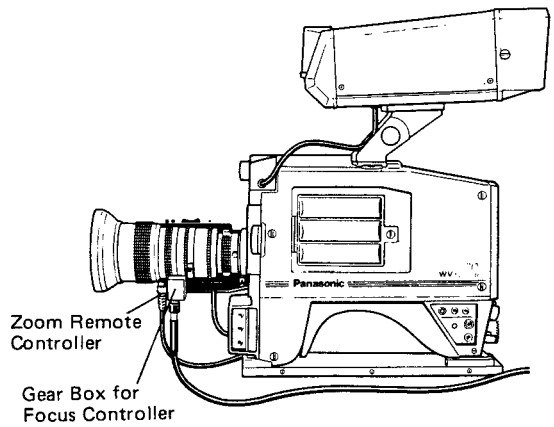
Mount the camera onto the tripod by screwing the mounting screw on the tripod into the mounting hole (standard N.C. 1/4"-20 thread or 3/8"-16 thread) on the bottom of the tripod mounting adaptor.



8. Mounting Lens Control Kit

Unscrew the cap for zoom remote controller connector ⑭ on the power servo control zoom lens and connect the zoom remote controller. Install the gear box for focus control at the bottom of the lens and connect the flexible cable with the focus controller to the gear box.

Install the zoom controller on the right tripod arm and the focus controller on the left tripod arm.



CONNECTION FOR ENG/EFP APPLICATIONS

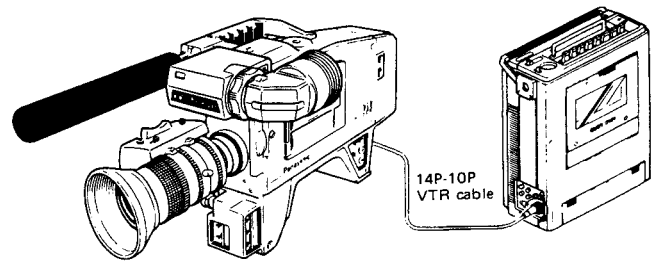
CAUTION : Keep the power selection switch ⑰ on the camera head in the OFF position during connection.

1. ENG Application

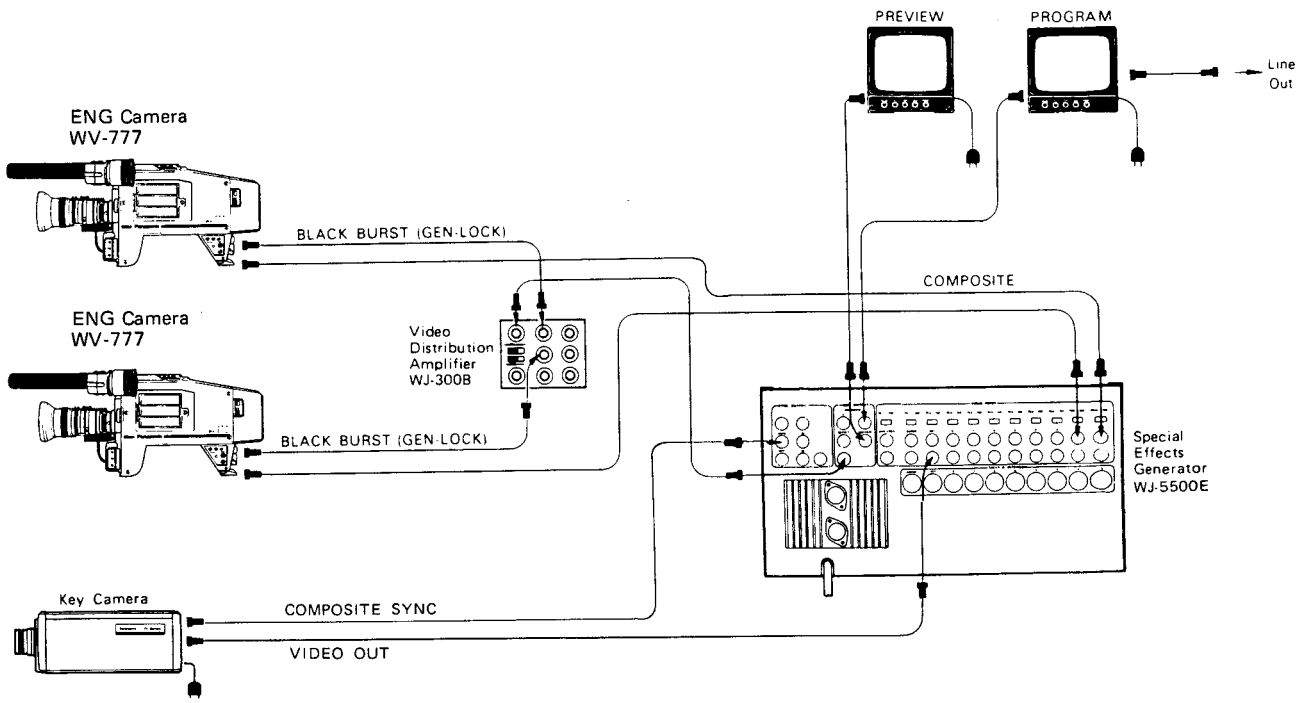
- Connect the 14P-10P VTR cable between the camera head and the Panasonic portable colour VTR (Standard VTR cable length is 3 m).
- Keep the power OFF on the Panasonic portable colour VTR during connection.

2. Gen-Lock EFP Application

- Connect the coaxial cable for gen-lock signal between the gen-lock input connector ㉘ (BNC type) on the camera head and the black burst output connector on the production system.
- Connect the coaxial cable for PAL output signal between the video output connector ㉙ (BNC type) on the camera head and the video input connector on the production system.



Note : (1) The following signal outputs will be utilized as gen-lock signals;
WJ-5500E : Black burst output
(2) The black burst output should be synchronized to system reference.
(3) Refer to the operating instructions of the special effects generator such as WJ-5500E.

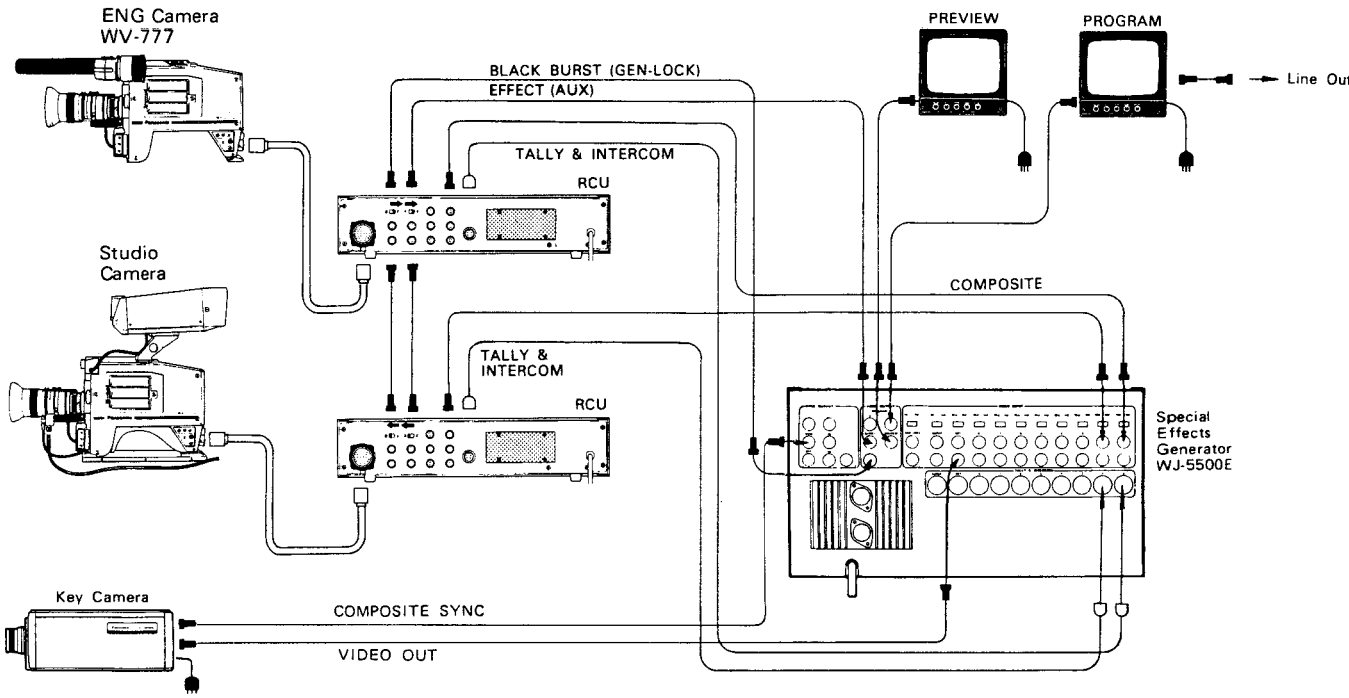


3. Gen-Lock EFP with RCU Application

- Connect the 32P studio cable between the camera head and RCU.
- Connect the coaxial cable for PAL output signal between the video output connector ⑫⑤ on the RCU and the video input on the production system.
- Connect the coaxial cable for gen-lock signal between the black burst output on the production system and the gen-lock input connector ⑪⑨ on the RCU (which may be bridged or looped through to another RCU).
- Connect the coaxial cable for lineview signal between the effect output on the production system and the auxiliary input connector ⑫① on the RCU (which may be bridged or looping through to another RCU).

Note : (1) The tally and intercom between the camera head, RCU and special effects generator will function only when the 4P cable for tally and intercom is connected between RCU and S.E.G.

(2) The 32P studio cable can be extended for maximum distance of 1000ft (approximately 300m). Cable length compensation switch ⑨⑦ should be turned to the appropriate position according to cable length.



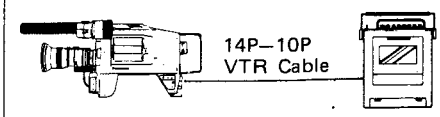
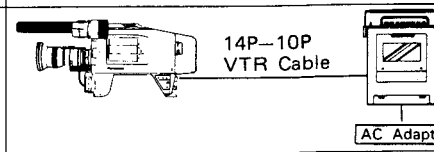
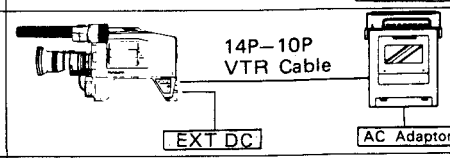
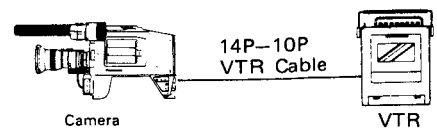
CONNECTION FOR STUDIO APPLICATIONS

- The studio cameras with RCU are connected according to the same scheme as for gen-lock EFP with RCU application when these studio cameras are used in a production system.

OPERATING PROCEDURE FOR ENG/EFP APPLICATIONS

1. ENG Application

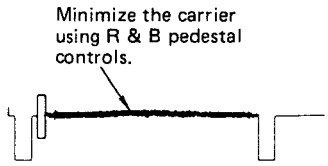
1) Make all the required connections.
2) Remove the lens cap.
3) Select the power source according to the table below.

Case No.	Camera Power	Portable VTR Power	Power Selection Switch ⑰	VTR – RCU Selector SW ㉒	Descriptions
1	Battery pack	Internal battery	EXT/BATT/AC ADP	VTR	
2	AC adaptor	Internal battery or AC adaptor	EXT/BATT/AC ADP	VTR	
3	External DC	Internal battery or AC adaptor	EXT/BATT/AC ADP	VTR	
4	Supplied from VTR	Internal battery	VTR/RCU	VTR	

Note : The cable distance between the camera and the VTR can be extended up to;
(a) Cases 1, 2 and 3: 60 m
(b) Case 4: 10 m

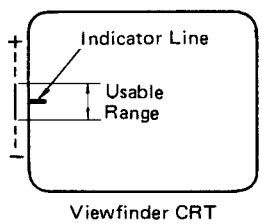
4) Turn both the camera and the portable VTR ON and set the portable VTR into the RECORD mode.
5) Select the proper filter according to colour temperature using the filter wheel ⑯ according to the table on page 38.
Note : When the camera is used under indoor illumination whose colour temperature is 3200° K, the filter wheel should be set to No. 1.
6) Set the monitoring signal selection switch ㊽ on the side of the camera to the ENC position.
7) Set the high gain selection switch ⑬ to the 0dB position.
8) Set the colour bar/camera selection switch ⑭ to the CAMERA position.
9) Set the standby/operate selection switch ⑮ to the OPERATE position.
10) Set the iris control selection switch ㉕ on the auto iris power servo control zoom lens to the AUTO position.
11) Set the auto/manual selection switch ⑧ to the AUTO position.
12) Set the auto white/auto black set switch ⑦ to the ABC position momentarily by pressing it down. The lens iris is automatically closed blocking the incoming light and the black balance is set automatically in approximately 5 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position.
Note : (1) The black balance is held for a long period of time even after the power switch is turned OFF. If the black level is in balance, the black balance setting is unnecessary.
(2) If the manual black balance setting is desired, adjust the red pedestal ㊹ and blue pedestal ㊺ controls after setting the auto/manual selection switch ⑧ to the MANUAL position, and closing the lens iris by setting the filter wheel ⑯ to No. 4 or capping the lens. Adjust the controls so that the carrier on the video output signal is minimum or the picture is black. The red and blue pedestal controls ㊹ & ㊺ are preset to the center position for the standard level.

(3) The total pedestal level can be adjusted by rotating the total pedestal control ⑯ regardless of the position of auto/manual selection switch ⑧. The pedestal level should be set to 0V.



13) Aim the camera at the white balance set chart (supplied) or at a white object. The white balance set chart should be fully framed on the viewfinder. Make sure that the horizontal level indicator line ⑥⓪ is in the usable range.

Note : When the lens is set to the manual iris control mode, set the lens iris so that the horizontal line comes in the center of the level indicator range.

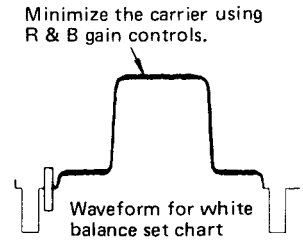


14) Set the auto white/auto black set switch ⑦ to the AWC position momentarily by pressing it up. The white balance is automatically set in approximately 5 seconds. The colour conversion warning (CCW) indicator ⑥③ in the viewfinder is flashing while the white balance is being set. It is goes off when the white balance setting is completed. If the CCW indicator remains ON, reset the white balance after confirming the position of filter wheel ⑯ referring to the table on page 38.

Note : (1) The white balance is held for a long period of time as well as the black balance even after the power switch is turned OFF. Therefore, if the colour temperature of the object/scene condition is the same as the previous setting, it is unnecessary to reset the white balance. However, when the colour temperature is changed from indoor to outdoor, for example, the white balance should be reset.

(2) Two backup batteries for the white balance should be changed every 2 years.
Remove the batteries when the camera is not used for a long period of time.

(3) If the manual white balance setting is desired, adjust the red gain control ⑤② and blue gain control ⑤③ after setting the auto/manual selection switch ⑧ to the MANUAL position. Adjust the controls so that the carrier on the video output signal is minimum or the picture becomes white. The red and blue gain controls ⑤② & ⑤③ are preset to the center position for the standard level.



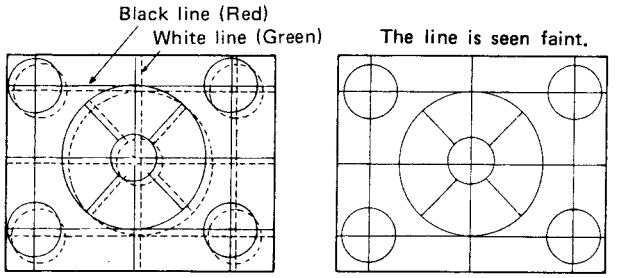
15) Aim the camera at the registration chart (not supplied) and set the controls on the side of the camera as follows (for registration adjustment of red and green signal) :

Monitoring Signal
Selection Switch ④⑧ : REG position
Registration Switch ④⑨ : R position
-G ON/OFF Switch ⑤⓪ : -G (upper) position

Note : If the monochrome video monitor is connected to the monitoring video output connector ③⓪, the R-G signal which appears in the viewfinder for registration adjustment is displayed on the video monitor.

16) While observing the viewfinder or external monochrome video monitor, turn the red horizontal centering ③⑨ and red vertical centering ④⓪ controls on the side of the camera and set them at points where the white and black lines are superimposed and almost cancelled.

Note : For accurate registration adjustment, reduce signal level below 0.5 Vp-p by rotating the iris ring ⑥① after setting the iris control selection switch ⑦⑤ on the lens to the MAN position.

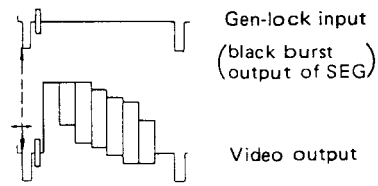


Displace Registration Condition　　Matched Registration Condition

17) Set the registration switch ㊾ to the B position for registration adjustment of blue and green signal.
18) While observing the viewfinder or external monochrome video monitor, turn the blue horizontal centering ㊳ and blue vertical centering ㊶ on the side of the camera and set them at points where the white and black lines are superimposed and almost cancelled.
    Note : If misregistration is still observed after adjusting the centering controls for red and blue signals with respect to the green signal, more detail adjustments (size, linearity, skew for example) are required. Refer for the detail adjustments to qualified service personnel.
19) Reset the monitoring signal selection switch ㊽ to the ENC position and iris control selection switch ㊺ to the AUTO position.
20) Aim the camera at an object further than 6 feet (2m) from the camera and loosen the flangeback lock knob ㊸ on the lens.
21) Zoom in (close up/telephoto) with the power servo zoom control ㊻ and adjust the lens focus with the focus ring ㊵.
22) Zoom out (wide angle) and adjust the focus by turning the flangeback adjusting ring ㊷.
23) Zoom in again and adjust the focus by turning the focus ring ㊵.
24) Zoom out again and adjust the focus by turning the flangeback adjusting ring ㊷.
25) Repeat proceeding steps 20) - 24) until the focus is maintained throughout the zoom range. After completing the flangeback adjustment, tighten the flangeback lock knob ㊸.
26) Adjust the zoom lens with the power servo zoom control ㊻ or manual zoom ring/lever ㊺ to have the desired picture composition.
27) Turn the focus ring ㊵ to get the best focus by watching the picture in the viewfinder.
    For macro function : Set the zoom ring/lever to macro by turning while depressing the macro knob after pulling the servo/manual zoom select knob ㊸ to the manual position for close up picture at distance as short as 2" (5 cm).
28) Press the VTR start/stop button ㊾ on the lens. The recording/tally indicator ㊷ will light as the recorder begins to record.
29) Press the VTR start/stop button ㊾ to stop the recorder at any time. The recording/tally indicator ㊷ should turn OFF. Press the button again to resume recording.
30) When the recording is finished and playback is desired depress STOP on the recorder. Rewind the tape to the beginning of the recording and proceed to play back.
31) Do not aim the camera at excessively bright objects for a long time since the pick-up tube may be damaged. Also keep the microphone away from loud sounds (such as the speaker of the TV), since howling noise (feedback) may occur.
    Caution : If the object/scene condition is darker and the light intensity is not sufficient, it is recommended to set the high gain selection switch ㊸ to the +6dB or +12dB position.

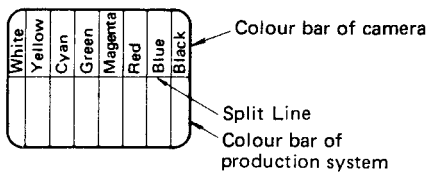
2. Gen-Lock EFP Application

1) Make all the required connections.
2) Select the power source, either the battery pack or AC adaptor.
   Battery pack : Limited time operation
   AC adaptor : Longer time operation
3) Set the power selection switch ㊼ to the EXT/BATT/AC ADP position.
4) Set the colour bar/camera selection switch ㊹ to the BAR position.
5) Set the standby/operate selection switch ㊺ to the OPERATE position.
6) Observe the gen-lock input and video output signals of camera using a dual-trace oscilloscope and adjust the horizontal phase control ㊹ to match the phase of these signals. This control is located inside the camera. Refer for adjusting this control to qualified service personnel.



7) Observe the program colour monitor output displaying the split picture of colour bar of the camera and colour bar of production system, and adjust the subcarrier phase coarse switch ⑯ and fine control ⑮ to match the hues. These controls are located inside the camera. Refer for adjusting these controls to qualified service personnel.

Note : Precise adjustment should be done using a vectorscope.

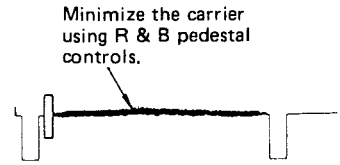


8) Set the colour bar/camera selection switch ⑭ to the CAMERA position.
9) Remove the lens cap.
10) Set the monitoring signal select switch ㊽ on the side of camera to the ENC position.
11) Select the proper colour temperature filter in the filter wheel ⑯ according to the table on page 38.
12) Set the high gain selection switch ⑬ to the 0 dB position. If the object/scene condition is darker and light intensity is insufficient, it is recommended to set the switch ⑬ to the +6 dB or +12 dB position.
13) Set the iris control selection switch ㉕ on the lens to the AUTO position.
14) Set the auto/manual selection switch ⑧ to the AUTO position.
15) Set the auto white/auto black set switch ⑦ to the ABC position momentarily by pressing it down. The lens iris is automatically closed blocking the incoming light and the black balance is set automatically in approximately 5 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position.

Note : (1) The black balance is held for a long period of time even after the power switch is turned OFF. If the black level is in balance, the black balance setting is unnecessary.

(2) If the manual black balance setting is desired, adjust the red pedestal ㊹ and blue pedestal ㊺ controls after setting the auto/manual selection switch ⑧ to the MANUAL position, and closing the lens iris by setting the filter wheel ⑯ to No. 4 or capping the lens. Adjust these controls so that the carrier on the video output signal is minimum. The red and blue pedestal controls ㊹ & ㊺ are preset to the center position for the standard level.

(3) The total pedestal level can be adjusted by rotating the total pedestal control ㊻ regardless of the position of auto/manual selection switch ⑧ The pedestal level should be set to 0V.



16) Aim the camera at the white balance set chart (supplied) or at a white object. The white balance set chart should be fully framed on the viewfinder. Make sure that the horizontal level indicator line ⑩ is in the usable range.

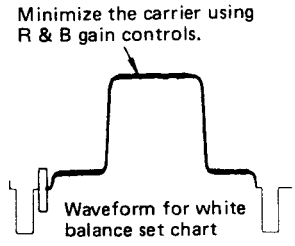
Note : When the lens is set to the manual iris control mode set the lens iris so that the horizontal line comes in the center of the level indicator range.

17) Set the auto white/auto black set switch ⑦ to the AWC position momentarily by pressing it up. The white balance is automatically set in approximately 5 seconds. The colour conversion warning (CCW) indicator ⑬ in the viewfinder is flashing while the white balance is being set. It is goes off when the white balance setting is completed. If the CCW indicator remains ON, reset the white balance after confirming the position of filter wheel ⑯ referring to the table on page 38.

Note : (1) The white balance is held for a long period of time as well as the black balance even after the power switch is turned OFF. Therefore, if the colour temperature of the object/scene condition is the same as the previous setting condition, it is unnecessary to reset the white balance. However, when the colour temperature is changed from indoor to outdoor, for example, the white balance should be reset.

(2) Two pieces of backup batteries for the white balance should be changed every 2 years.
Remove the batteries when the camera is not used for a long period of time.

(3) If the manual white balance setting is desired, adjust the red gain control ㊷ and blue gain control ㊸ after setting the auto/manual selection switch ⑧ to the MANUAL position so that the carrier on the video output signal is minimum or the picture becomes white. The red and blue gain controls ㊷ & ㊸ are preset to the center position for the standard level.



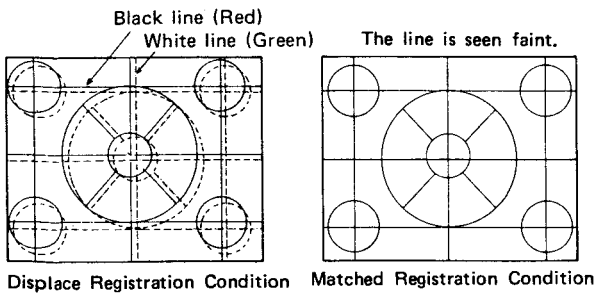
18) Aim the camera at the registration chart (not supplied) and set the controls on the side of camera as follows (for registration adjustment of red and green signal) :

Monitoring Signal
Selection Switch ㊽ : REG position
Registration Switch ㊾ : R position
-G ON/OFF Switch ㊿ : -G (upper) position

Note : If the monochrome video monitor is connected to the monitoring video output connector ㉚, the R-G signal which appears in the viewfinder for registration adjustment is displayed on the video monitor.

19) While observing the viewfinder or external monochrome video monitor, turn the red horizontal centering ㊴ and red vertical centering ㊵ controls on the side of the camera and set them at points where the white and black lines are superimposed and almost cancelled.

Note : For accurate registration adjustment, reduce the signal level below 0.5 Vp-p by rotating the iris ring ㊶ after setting the iris control selection switch ㊺ on the lens to the MAN position.



20) Set the registration switch ㊾ to the B position for registration adjustment of blue and green signal.

21) While observing the viewfinder or external monochrome video monitor, turn the blue horizontal centering ㊳ and blue vertical centering ㊶ on the side of the camera and set them at points where the white and black lines are superimposed and almost cancelled.

Note : If misregistration is still observed after adjusting the centering controls for red and blue signals with respect to the green signal, more detail adjustments (size, linearity, skew for example) are required. Refer for the detail adjustments to qualified service personnel.

22) Reset the monitoring signal selection switch ㊽ to the ENC position and iris control selection switch ㊺ to the AUTO position.

23) Aim the camera at an object further than 6 feet (2m) from the camera and loosen the flangeback lock knob ㊸ on the lens.

24) Zoom in (close up/telephoto) with the power servo zoom control ㊻ and adjust the lens focus with the focus ring ㊵.

25) Zoom out (wide angle) and adjust the focus by turning the flangeback adjusting ring ㊷.

26) Zoom in again and adjust the focus by turning the focus ring ㊵.

27) Zoom out again and adjust the focus by turning the flangeback adjusting ring ㊷.

28) Repeat proceeding steps 23) - 27) until the focus is maintained throughout the zoom range. After completing the flangeback adjustment, tighten the flangeback lock knob ㊸.

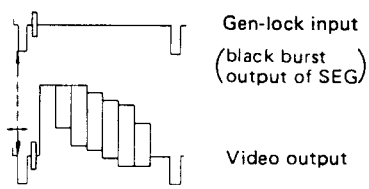
29) Adjust the zoom lens with the power servo zoom control ㊻ or manual zoom ring/lever ㊺ to have the desired picture composition.

30) Turn the focus ring ㊵ to get the best focus by watching the picture in the viewfinder.

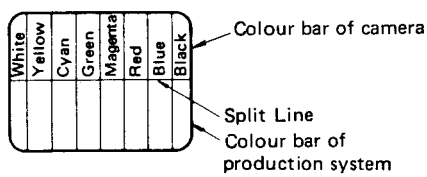
For macro function : Set the zoom ring/lever to macro by turning while depressing the macro knob after pulling the servo/manual zoom select knob ㊸ to the manual position for close up picture at distance as short as 2"(5 cm).

3. Gen-Lock EFP with RCU Application (Studio Application)

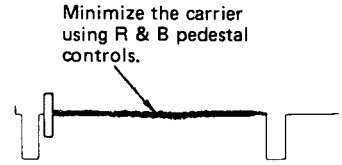
1) Make all the required connections and make sure that the gen-lock input termination switch ⑱ and the auxiliary input termination switch ⑳ are properly set.
2) Set the power selection switch ⑰ to the VTR/RCU position.
3) Set the VTR-RCU selector switch ㉒ to the RCU position.
   Note : All controls on the camera are not functional when VTR-RCU selector switch is in the RCU position (except high gain selection switch, standby/operate selection switch and controls for registration adjustment).
4) Set the cable length compensation switch ㊼ according to the length of cable used.
   Note : Standard cable length is 7.5 m.
5) Set the colour bar/camera selection switch ㊻ to the BAR position.
6) Keep setting the standby/operate selection switch ⑮ to the OPERATE position.
7) Observe the gen-lock input and video output signals of RCU using a dual-trace oscilloscope and adjust the horizontal phase control ㊵ to match the phase of these signals.



8) Observe the program colour monitor output displaying the split picture of colour bar of the camera and colour bar of production system, and adjust the subcarrier phase coarse switch ㊶ and fine control ㊷ to match the hues.
   Note : Precise adjustment should be done using a vectorscope.



9) Set the colour bar/camera selection switch ㊻ to the CAMERA position.
10) Remove the lens cap.
11) Set the monitoring signal select switch ㊽ on the side of camera to the ENC position.
12) Select the proper colour temperature filter in the filter wheel ⑯ according to the table on page 38.
13) Set the high gain selection switch ⑬ to the 0 dB position. If the object/scene condition is darker and light intensity is not sufficient, it is recommended to set the switch ⑬ to the +6 dB or +12 dB position.
14) Set the iris control selection switch ㉕ on the lens to the REM position and the lens iris control ㊱ to the AUTO position.
15) Set the auto/manual selection switch ㊾ to the AUTO position.
16) Set the auto white/auto black set switch ㊽ to the ABC position momentarily by pressing it down. The lens iris is automatically closed blocking the incoming light and the black balance is set automatically in approximately 5 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position.
   Note : (1) The black balance is held for a long period of time even after the power switch is turned OFF. If the black level is in balance, the black balance setting is unnecessary.
   (2) If the manual black balance setting is desired, adjust the red pedestal ㊸ and blue pedestal ㊹ controls after setting the auto/manual selection switch ㊾ to the MANUAL position, and closing the lens iris by setting the filter wheel ⑯ to No. 4 or capping the lens. Adjust the controls so that the carrier on the video output signal is minimum. The red and blue pedestal controls ㊸ & ㊹ are preset to the center detent position for the standard level.
   (3) The total pedestal level can be adjusted by rotating the total pedestal control ㊺ regardless of the position of auto/manual selection switch ㊾ The pedestal level should be set 0V.



17) Aim the camera at the white balance set chart (supplied) or at a white object. The white balance set chart should be fully framed on the viewfinder. Make sure that the horizontal level indicator line ⑥⓪ is in the usable range.

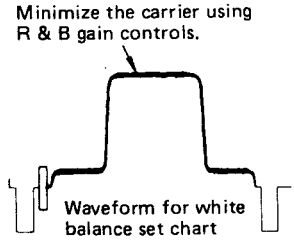
Note : When the lens is used in the manual iris control mode, turn the lens iris control ⑪⑥ so that the horizontal line comes in the center of the level indicator range.

18) Set the auto white/auto black set switch ⑨⑧ to the AWC position momentarily by pressing it up. The white balance is automatically set in approximately 5 seconds. The colour conversion warning (CCW) indicator ⑥③ in the 1.5"viewfinder is flashing while the white balance is being set. It is goes off when the white balance setting is completed. If the CCW indicator in the 1.5"viewfinder remains ON, reset the white balance after confirming the position of filter wheel ⑯ referring to the table on page 38.

Note : (1) The white balance is held for a long period of time as well as the black balance even after the power switch is turned OFF. Therefore, if the colour temperature of the object/scene condition is the same as the previous setting, it is unnecessary to reset the white balance. However, when the colour temperature is changed from indoor to outdoor, for example, the white balance should be reset.

(2) Two pieces of backup batteries for the white balance should be changed every 2 years.
Remove the batteries when the camera is not used for a long period of time.

(3) If the manual white balance setting is desired, adjust the red gain control ⑩⑥ and blue gain control ⑩⑦ after setting the auto/manual selection switch ⑨⑨ to the MANUAL position so that the carrier on the video output signal is minimum. The red and blue gain control ⑩⑥ & ⑩⑦ are preset to the center position for the standard level.

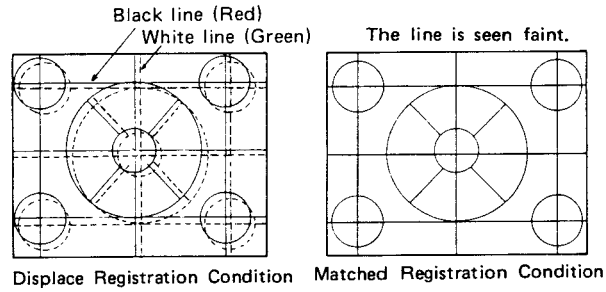


19) Connect the monochrome video monitor to the monitoring video output ⑫⑥ on the RCU for the registration adjustment.

20) Aim the camera at the registration chart (not supplied) and set the controls on the RCU as follows for registration adjustment of red and green signal.
Monitoring Signal
Selection Switch ⑩⑧ : REG position
Registration Switch ⑩⑨ : R position
-G ON/OFF Switch ⑪⓪ : -G (upper) position

21) While observing the external monochrome video monitor, turn the red horizontal centering ⑪⑦ and red vertical centering ⑪④ controls on the RCU and set them at points where the white and black lines are superimposed and almost cancelled.

Note : For accurate registration adjustment, reduce the signal level below 0.5 Vp-p by adjusting the lens iris control ⑪⑥ on the RCU.



22) Set the registration switch ⑩⑨ to the B position for registration adjustment of blue and green signal.

23) While observing the external monochrome video monitor, turn the blue horizontal centering ⑪③ and blue vertical centering ⑪⑤ on the RCU and set them at points where the white and black lines are superimposed and almost cancelled.

Note : If misregistration is still observed after adjusting the centering controls for red and blue signals with respect to the green signal, more detail adjustments (size, linearity, skew for example) are required. Refer for the detail adjustments to qualified service personnel.

24) Reset the monitoring signal selection switch ⑩⑧ to the ENC position and lens iris control ⑪⑥ to the AUTO position.

25) Aim the camera at an object further than 6 feet (2m) from the camera and loosen the flangeback lock knob ⑧③ on the lens.

26) Zoom in (close up/telephoto) with the power servo zoom control ⑦⑤ and adjust the lens focus with the focus ring ⑧⓪.

ADJUSTMENT

27) Zoom out (wide angle) and adjust the focus by turning the flangeback adjusting ring ㉜.
28) Zoom in again and adjust the focus by turning the focus ring ㉚.
29) Zoom out again and adjust the focus by turning the flangeback adjusting ring ㉜.
30) Repeat proceeding steps 25) - 29) until the focus is maintained throughout the zoom range. After completing the flangeback adjustment, tighten the flangeback lock knob ㉝.
31) Adjust the zoom lens with the power servo zoom control ㉖ or manual zoom ring/lever ㉟ to have the desired picture composition.
32) Turn the focus ring ㉚ to get the best focus by watching the picture in the viewfinder.
For macro function : Set the zoom ring/lever to macro by turning while depressing the macro knob after pulling the servo/manual zoom select knob ㉓ to the manual position for close up pictures at distances as short as 2"(5 cm).
Note : The lineview output of special effects generator through RCU can be observed on the viewfinder when the return video button ㉗ on the lens is depressed.

■ Auto Iris Power Servo Control Zoom Lens

● Iris Control

For auto iris position

Set the iris control selection switch ㉕ to the AUTO position. The lens iris opening is automatically adjusted for proper light intensity.

The auto iris level can be fine-controlled by adjusting the auto iris level fine control ㉘.

Note : When used with the RCU, the auto iris level can be remotely controlled by rotating the lens iris control ⑯ on the RCU. In this case, do not set the lens iris control on the RCU to the AUTO position.

For manual iris position

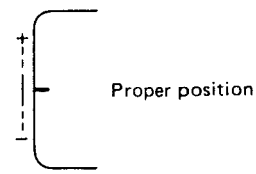
Set the iris control selection switch ㉕ to the MAN position. The lens iris opening is manually adjusted by rotating the iris ring ㉛.

Note : The lens iris is automatically controlled while the auto iris button ㉔ is being pressed even when the iris control selection switch ㉕ is set in the MAN position.

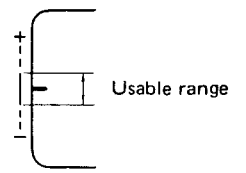
For remote iris position

Set the iris control selection switch ㉕ to the REM position when used with the RCU. The lens iris may be then remotely controlled from the RCU. When the lens iris control ⑯ on the RCU is set to the AUTO position, the lens iris opening is automatically adjusted. The lens iris opening is manually adjusted by rotating the lens iris control ⑯ for;

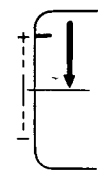
● Proper iris setting position.



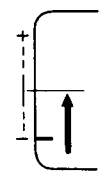
● Usable iris setting range.



● Illumination too high.
Close the lens iris.



● Illumination too low.
Open the lens iris.



Iris number indicator on the lens shows the iris opening and is incorporated in manual mode as shown in the illustration.

For macro function

Set the zoom/macro ring to macro position by turning it for close up pictures down to a distance of 2" (5 cm) while pressing the macro knob. The servo/manual zoom select knob must be set to the Manual position.

- **Flangeback**

Adjust the flangeback of the lens according to the following :

- Aim the camera at an object further than 6 feet (2 m) from the camera and loosen the flangeback lock knob ㉝ on the lens.
- Zoom in (close up/telephoto) with the power servo zoom control ㊻ and adjust the lens focus with the focus ring ㊵ .
- Zoom out (wide angle) and adjust the focus by turning the flangeback adjusting ring ㊷ on the lens.
- Zoom in again and adjust the focus by turning the focus ring.
- Zoom out again and adjust the focus by turning the flangeback adjusting ring.
- Repeat the above steps until the focus is maintained throughout the zoom range. After completing the flangeback adjustment, tighten the flangeback lock knob.

Note : Readjust the flangeback only if the lens is replaced.

■ **Auto Black Balance Setting**

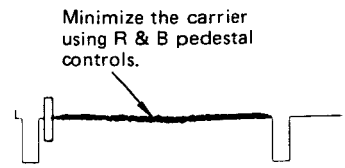
The black balance can be automatically set by the following.

- Set the colour bar/camera selection switch ⑭ or ㊻ on the camera or on the RCU to the CAMERA position.
- Set the high gain selection switch ⑬ on the camera to the 0 dB position.
- Set the standby/operate selection switch ⑮ to the OPERATE position.
- For the ENG/gen-lock EFP applications, set the iris control selection switch ㊺ on the auto iris power servo control zoom lens to the AUTO position. For the gen-lock EFP with RCU application (studio application), set the iris control selection switch ㊺ on the lens to the REM position and the lens iris control ⑯ on the RCU to the AUTO position.
- Set the auto manual selection switch ⑧ or ㊾ to the AUTO position.
- Set the auto white/auto black set switch ⑦ or ㊽ to the ABC position momentarily by pressing it down. The lens iris is automatically closed blocking the incoming light and the black balance is set automatically in approximately 5 seconds. After completing the black balance setting, the lens iris is automatically returned to the previous position.

Note : (1) The black balance is held for a long period of time even after the power switch is turned OFF. If the black level is in balance, the black balance setting is unnecessary.

(2) If the manual black balance setting is desired, adjust the red pedestal ㊹ or ㊸ and blue pedestal ㊺ or ㊹ controls after setting the auto/manual selection switch ⑧ or ㊾ to the MANUAL position, and closing the lens iris by setting the filter wheel ⑯ to No. 4 or capping the lens. Adjust the controls so that the carrier on the video output signal is minimum or the picture is black. The red and blue pedestal controls are preset to the center position for the standard level.

(3) The total pedestal level can be adjusted by rotating the total pedestal control ㊻ or ㊺ regardless of the position of auto/manual selection switch ⑧ or ㊾ . The pedestal level should be set to 0V.



■ **Auto White Balance Setting**

The white balance can be automatically set by the following.

- Set the colour bar/camera selection switch ⑭ or ㊻ on the camera or on the RCU to the CAMERA position.
- Select the proper filter according to colour temperature using the filter wheel ⑯ according to the table on page 38.

Note : When the camera is used under indoor illumination whose colour temperature is 3200°K, the filter wheel should be set to No. 1.

- Set the high gain selection switch ⑬ on the camera to the 0 dB position. If the object/scene condition is darker and light intensity is not sufficient, it is recommended to set the switch ⑬ to the +6 dB or +12 dB position.
- Set the standby/operate selection switch ⑮ to the operate position.
- For the ENG/gen-lock EFP applications, set the iris control selection switch ⑮ on the auto iris power servo control zoom lens to the AUTO position. For the gen-lock EFP with RCU application (studio application), set the iris control selection switch ⑮ on the lens to the REM position and the lens iris control ⑯ on the RCU to the AUTO position.
- Set the auto manual selection switch ⑧ or ⑨⑨ to the AUTO position.
- Aim the camera at the white balance set chart (supplied) or at a white object. The white balance set chart should be fully framed on the viewfinder. Make sure that the horizontal level indicator line ⑥⓪ is in the usable range.

  Note : When the lens is set in the manual iris control mode, set the lens iris so that the horizontal line comes in the center of the level indicator range.
- Set the auto white/auto black set switch ⑦ or ⑨⑧ to the AWC position momentarily by pressing it up. The white balance is automatically set in approximately 5 seconds. the colour conversion warning (CCW) indicator ⑥③ in the 1.5" viewfinder is flashing while the white balance is being set. It is goes off when the white balance setting is completed. If the CCW indicator remains ON, reset the white balance after confirming the position of filter wheel ⑯ referring to the table on page 38.

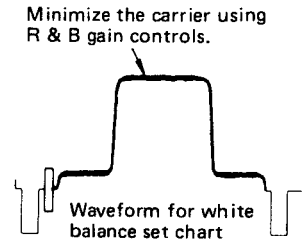
  Note : (1) The white balance is held for a long period of time as well as the black balance even after the power switch is turned OFF. Therefore, if the colour temperature of the object/scene condition is the same as the previous setting, it is unnecessary to reset the white balance.

  However, when the colour temperature is changed from indoor to outdoor, for example, the white balance should be reset.

  (2) Two backup batteries for the white balance should be changed every 2 years.

  Remove the batteries when the camera is not used for a long period of time.

(3) If the manual white balance setting is desired, adjust the red gain control ⑤② or ⑩⑥ and blue gain control ⑤③ or ⑩⑦ after setting the auto/manual selection switch ⑧ or ⑨⑨ to the MANUAL position. Adjust the controls so that the carrier on the video output signal is minimum or the picture becomes white. The red and blue gain controls are preset to the center position for the standard level.



■ **Registration**

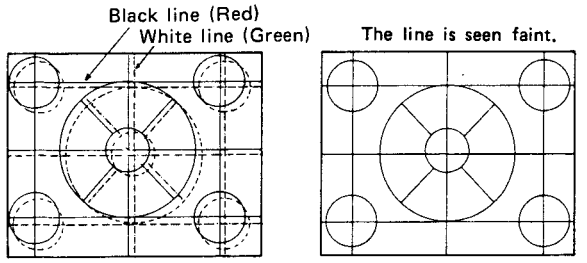
- Aim the camera at the registration chart (not supplied) and set the controls on the side of camera or on the front of the RCU as follows for registration adjustment of red and green signal.

  Monitoring Signal
  Selection Switch ④⑧ or ⑩⑧ : REG position
  Registration Switch ④⑨ or ⑩⑨ : R position
  -G ON/OFF Switch ⑤⓪ or ⑪⓪ : -G (upper) position

  Note : (1) If the monochrome video monitor is connected to the monitoring video output connector ③⓪ in the ENG/gen-lock EFP applications, the R-G signal which appears in the viewfinder for registration adjustment is displayed on the video monitor.

  (2) Connect the monochrome video monitor to the monitoring video output ⑫⑥ on the RCU for the registration adjustment.
- While observing the viewfinder or external monochrome video monitor, turn the red horizontal centering ③⑨ or ⑪⑫ and red vertical centering ④⓪ or ⑪④ controls on the side of the camera or on the front of the RCU and set them at points where the white and black lines are superimposed and almost cancelled.

  Note : For accurate registration adjustment, reduce signal level below 0.5 Vp-p by rotating the iris ring ⑧① after setting the iris control selection switch ⑮ on the lens to the MAN position or by adjusting the lens iris control ⑯ on the RCU.



- Set the registration switch ㊾ or ⑩⑨ to the B position for registration adjustment of blue and green signal.
- While observing the viewfinder or external monochrome video monitor, turn the blue horizontal centering ㊳ or ⑪③ and blue vertical centering ㊶ or ⑪⑤ on the side of the camera or on the front of the RCU and set them at points where the white and black lines are superimposed and almost cancelled.

  Note : If misregistration is still observed after adjusting the centering controls for red and blue signals with respect to the green signal, more detail adjustments (size, linearity, skew for example) are required. Refer for the detail adjustments to qualified service personnel.

■ Filter Wheel

Select the colour temperature conversion filter according to the light source used.

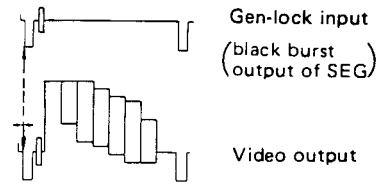
	Object/Scene & Light Source Condition	Colour Temperature	Wheel No.
INDOOR	Halogen Lamp or Tungsten Lamp (Studio)	3200°K	1
	Fluorescent Lamp (White)	4500°K	3
	Fluorescent Lamp (Daylight)	6500°K	3
OUTDOOR	Daylight (Very Fine)	4500°K	2
	Daylight (Fine-Partly Cloudy)	5000° – 6000°K	2
	Cloudy	7000° – 7500°K	3

Note : The outdoors colour temperature changes according to the weather conditions.

■ Gen-Lock

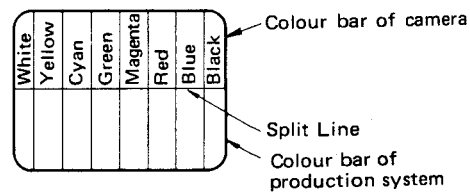
- Horizontal Phase Control

  Observe the gen-lock input and video output signals on the camera or RCU using a dual-trace oscilloscope and adjust the horizontal phase control on the camera or RCU to line up the phase of both signals.

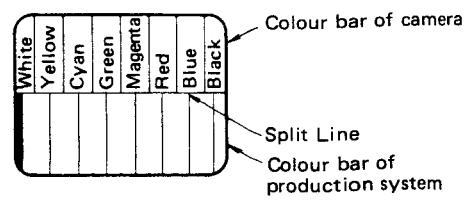


- Subcarrier Phase Control

  Observe the program colour monitor output displaying the split picture of colour bar of the camera and colour bar of the production system and adjust the subcarrier phase coarse switch and subcarrier phase fine control on the camera head or the RCU to match the hues of both signals. The precise adjustment should be done using a vectorscope.

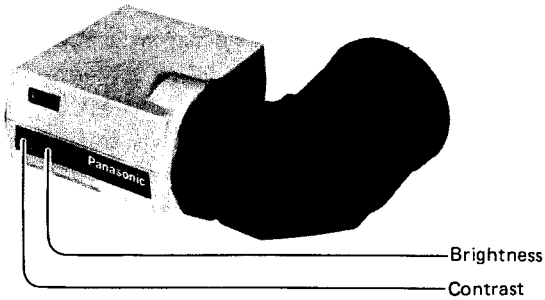


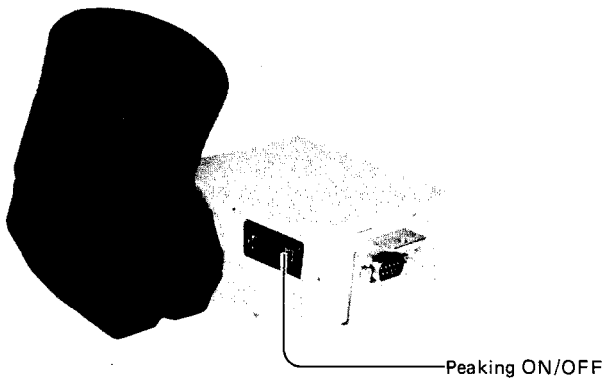
Note : Usable adjustments can be made by observing the program output of horizontally split colour bars to match the hues and horizontal positions for both colour bars.

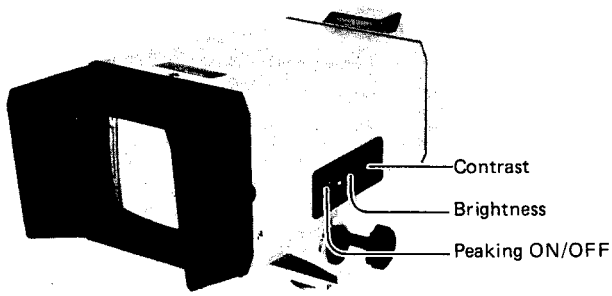


■ Viewfinder

- Contrast Control (CONTRAST)
  Turn this control clockwise to increase picture contrast.
- Brightness Control (BRIGHT)
  Turn this control clockwise to increase picture brightness.
- Peaking ON/OFF Switch (PEAKING ON-OFF)
  Set this switch to the OFF position in the normal operating condition. When the camera is aimed at a weakly illuminated scene, set the switch to the ON position so that focusing of picture in the viewfinder is made easier.
- Eye Cap (1-3/8" electronic viewfinder only)
  Each person has different eye focal distance (especially people with eye glasses). Rotate the eye cap for the best eye focal distance.

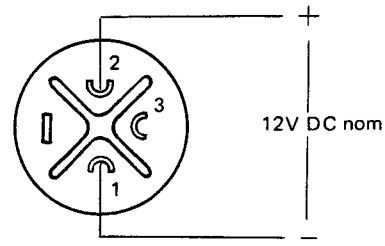






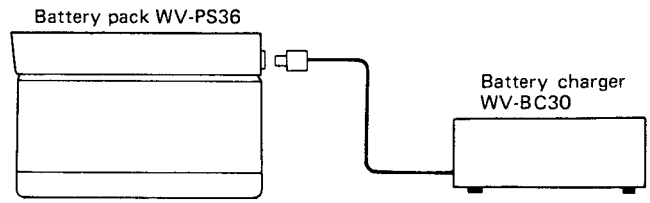
EXTERNAL DC INFORMATION

The camera can receive external DC power through the 3P (XLR) connector. The 3P connection for the external DC power source is shown as;



BATTERY CHARGE

The battery pack WV-PS36 can be charged by the battery charger WV-BC30.



Caution : (1) It is recommended to charge the battery pack for approximately 15 hours (not more than 24 hours) for longer life.
(2) Remove the battery pack from the camera when charging.

SPECIFICATIONS

ENG Colour Camera WV-777

Camera Head

Pick-up System :	Prism system using three Saticon® tubes
Pick-up Tube :	Three 2/3" electrostatic focusing, magnetic deflection Saticon® tube, type H4101
Scanning Standard :	625 lines, 50 fields, 25 frames
Synchronizing System :	Internal or external (gen-lock) switchable automatically Internal : CCIR standard External (gen-lock) Input : PAL composite signal or Black Burst signal
Subcarrier Phase for Gen-Lock :	Adjustable more than 360°
Horizontal Phase for Gen-Lock :	Adjustable from −0.1 μsec to +3.5 μsec
Video Output :	Three outputs 1.0 Vp-p PAL composite/75 ohms x 1 (BNC connector) 1.0 Vp-p PAL composite/75 ohms x 1 (14P VTR connector) 1.0 Vp-p PAL composite/75 ohms x 1 (32P RCU connector)
Monitoring Video Output (Pix Output) :	PAL, Red, Green, Blue, R-G, B-G or Aux composite signal selectable/75 ohms x 1 (BNC connector)
Auxiliary Input :	1.0 Vp-p composite/75 ohms through 32P connector
Audio Input :	Mic Input : −70 dBm balanced x 2 (XLR connectors)
Audio Output :	−20 dBm unbalanced or −70 dBm balanced switchable (14P VTR connector)
Illumination Required :	2000 lux at F4
Minimum Illumination : (More than 70 IRE output)	150 lux at F1.6 with +6 dB Gain ON 80 lux at F1.6 with +12 dB Gain ON
Signal-to-Noise Ratio:	53 dB (luminance) at 2000 lux, F4 without gamma and aperture correction
Horizontal Resolution :	550 lines at center
Geometric Distortion :	Less than 2%
Sweep Linearity :	Less than 2%
Registration :	Less than 0.1% within circle having a diameter 80% of picture height Less than 0.3% within circle having a diameter of picture width Less than 0.6% elsewhere
Vertical Aperture Correction :	1 line type
White Balance :	Automatic or manual
Black Balance :	Automatic or manual
Colour Bar :	Built-in EBU colour bar generator
Colour Conversion Filters :	3200°K, 5600°K, 5600°K with 12.5% ND
Maximum Cable Length :	14P VTR Cable : 10m at power source supplied from VTR 60m at separate power sources 32P Studio Cable : 300m with cable compensator
Switches :	Power Selection, Standby, VTR-RCU Selection, Camera/Color Bar Selection, High Gain Selection, Auto/Manual Selection, Auto White/ Auto Black Set, Detail ON/OFF, Monitoring Video Selection
Controls :	R and B Gain, R and B Pedestal, Total Pedestal, Intercom Level, Adjusting controls for registration
Lens Supplied :	12:1 auto iris power servo control zoom lens, 10mm – 120mm F1.6 with auto/manual control and macro function
Lens Mount :	Bayonet mount

Power Source :		12V DC five (5) ways such as; (1) VTR built-in battery (2) Battery pack (3) AC adaptor (4) External DC through 3P connector (5) Remote control unit through 32P camera cable
Battery Pack Operating Time :		Approx. 1.5 hours
Power Consumption :	Camera Head ;	18 watts (12V DC, 1.5A)
	ENG Configuration ;	21.6 watts (12V DC, 1.8A)
	Studio Configuration ;	26.4 watts (12V DC, 2.2A)
Ambient Operating Temperature :		−10°C ~ +45°C
Ambient Operating Humidity :		30% ~ 90%
Dimensions :	Camera Head Only ;	160 (W) x 270 (H) x 366 (D) mm
	ENG Configuration ;	261 (W) x 290 (H) x 597 (D) mm
	Studio Configuration ;	168 (W) x 463 (H) x 529 (D) mm
Weight :	Camera Head Only ;	4.7 kg
	ENG Configuration ;	7.0 kg
	Studio Configuration ;	9.8 kg

Weights and dimensions shown are approximate.
Specifications are subject to change without notice.

COMPOSITION

■ ENG Colour Camera WV-777

- Camera Head . . . . . 1 set
- 1.5" Electronic Viewfinder . . . . . 1 set
- AC Adaptor . . . . . 1 set
- Battery Pack . . . . . 1 set
- Battery Charger . . . . . 1 set
- 12:1 Auto Iris Servo Control Zoom Lens . 1 set
- Uni-Directional Electret Condenser Microphone . . . . . 1 pc
- Dry Battery AA Size for Microphone . . . . 1 pc
- Carrying Case . . . . . 1 pc
- Tripod Mounting Adaptor . . . . . 1 pc
- Rain Coat . . . . . 1 pc
- 14P-10P VTR Cable 10ft . . . . . 1 pc
- 3P (XLR) Connector . . . . . 1 pc
- Silver Oxide Battery (Built-in) . . . . . 2 pcs
- Registration and White Balance Chart . . . . 1 pc
- Colour Sheet . . . . . 1 pc
- PCB Extender . . . . . 2 pcs
- Fan Bag . . . . . 1 set

■ Studio Configuration WV-777ST

- Camera Head . . . . . 1 set
- 5" Electronic Viewfinder WV-VF35 . . . . 1 set
- Remote Control Unit WV-RC30 . . . . . 1 set
- Studio Cable 32A-25 . . . . . 1 pc
- Tripod Mounting Adaptor. . . . . 1 pc
- 12 : 1 Auto Iris Servo Control Zoom Lens WV-LZ30/12 . . . . . 1 set
- Lens Control Kit WV-LK30 . . . . . 1 set

■ Main Optional Accessories

■ Remote Control Unit (RCU) WV-RC30

- Remote Control Unit (RCU) . . . . . 1 set
- 4P connector for Tally/Intercom . . . . . 1 pc

■ 5" Electronic Viewfinder WV-VF35

- 5" Electronic Viewfinder . . . . . 1 set
- Attaching Base . . . . . 1 set
- Tally Card . . . . . 1 set

■ 1.5" Electronic Viewfinder WV-VF30

- 1.5" Electronic Viewfinder . . . . . 1 set

■ 12:1 Servo Control Zoom Lens WV-LZ30/12

- 12:1 Servo Control Zoom Lens . . . . . 1 pc

■ Lens Control Kit WV-LK30

- Zoom Remote Controller . . . . . 1 pc
- Focus Controller with Gear Box . . . . . 1 pc

■ Uni-Directional Eelectret Condenser Microphone WV-MC30

- Uni-Directional Electret Condenser Microphone . . . . . 1 pc

■ AC Adaptor WV-PS30

- AC Adaptor . . . . . 1 pc

■ Battery Pack WV-PS36

- Battery Pack . . . . . 1 pc

■ Other Optional Accessories

• 14P-10P VTR Cable	: WV-CA30	10ft
• 10P VTR Extension Cable	: 10H-25A	25ft
	10H-50A	50ft
• Studio Cable	: 32A-25	25ft
• Studio Extension Cable	: 32A-50	50ft
	32A-100	100ft
• Battery Charger	: WV-BC30	
• Carrying Case	: WV-CC30	